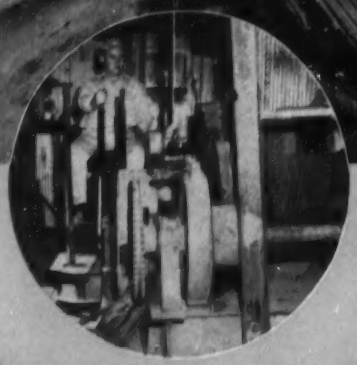
CONSTRUCTION
METHODS AND EQUIPMENT

April 1956



Here's Brannan Sand & Gravel Co.'s 1100-foot long drag-scraper operation, (close-up view of winch and controls) all equipped with Yellow Strand Wire Rope.

Yellow Strand
is the *100% CHOICE* on this "MILE HIGH" GRAVEL OPERATION

Brannan Sand & Gravel Company, Denver, Colorado, supplies thousands of tons of sand and gravel a year for construction in this "mile high" territory. On all of their modern, high-speed equipment, they use Yellow Strand Wire Rope 100% and prefer Yellow Strand Flattened Strand for all of their dragline operations. Outstanding performance has convinced this progressive firm that their wisest wire rope choice is regular Yellow Strand and Yellow Strand Flattened Strand Wire Rope. B. F. Shaw, Superintendent says, "After using several brands of wire rope, we have found B & B most satisfactory."

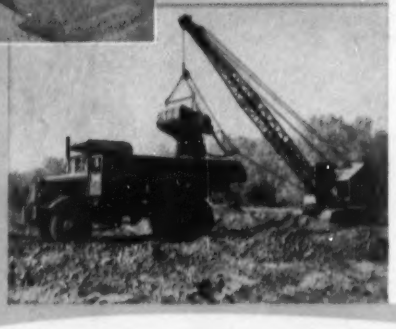
Regular Yellow Strand Wire Rope gives Brannan many extra days of service. It spools smoother, reeves easier and bends with less fatigue. Yellow Strand Flattened Strand is preferred by Brannan on draglines because it's specially designed for tougher applications. There's a long-lasting Yellow Strand to fit your exact needs. Your Yellow Strand Distributor can specify the type to save you money. See him today.

ON SHOVEL

Brannan depends on Yellow Strand Wire Rope on this ¾ yard shovel loading 100 tons per hour.

ON DRAGLINE

This 1-yard machine at Brannan Sand & Gravel Co. near Denver, Colorado, has been using Yellow Strand Flattened Strand Wire Rope for more than five years.



Yellow Strand®

Manufacturers of Wire Rope for 80 Years

Broderick & Bascom Rope Co.

4203 Union Blvd., St. Louis 15, Mo.

American Logging Tool Corporation is a subsidiary of Broderick & Bascom Rope Co.

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

Now they cut through rock with fire

A typical example of B. F. Goodrich improvement in rubber

THE white flame shooting out of the metal pipe is 3800 degrees hot. So hot that it eats through 25 feet of solid granite in *an hour*—something that used to take two men with drills all day long. The spitting fire is made right there in the pipe—a mixture of oxygen and fuel oil fed to the pipe through rubber hose.

The equipment maker wanted a hose that wouldn't go to pieces in a few days from the pressure, oil and heat. His men talked it over with B. F. Goodrich and learned that engineers had developed a hose for just such jobs.

They found a way of reinforcing the hose with strong cords that stand over 5 times the pressure needed to shoot the flame—protecting the man who does the work. They developed a special rubber for the inside that stands oil without rotting or weakening.

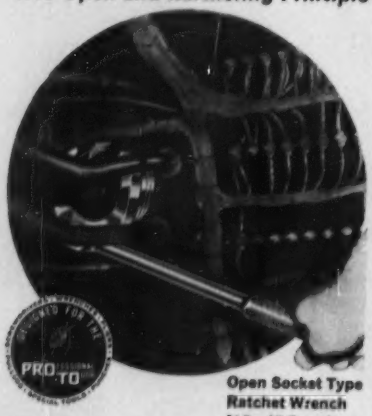
The B. F. Goodrich hose that carries the oxygen, fuel oil, and cooling water to the jet pipe had been on the job 8 *months* when the picture was taken, is still going strong.

This is an example of the ways B. F. Goodrich engineers find to make rubber save money for users—either by doing a job other rubber can't do, or by lasting longer, or by replacing other more expensive materials. Your B. F. Goodrich distributor would like to tell you what these improvements are, and how they can be employed for your profit. *The B. F. Goodrich Company, Dept. M-618, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

Big News! PROTO Now Makes the Exclusive TAC TOOL LINE

featuring the famous
TAC Open-End Ratcheting Principle



Open Socket Type
Ratchet Wrench
⅜"—4" Openings

Magic for those Hard-to-Reach Places!

Yes... PROTO has acquired the complete line of TAC ratcheting wrenches and is now the sole manufacturer of these patented, versatile tools.

Using the open-end ratcheting principle, these wrenches work in close quarters, over and around tubing, on hidden bolts and nuts, in recesses or wells. See your PROTO dealer. Send 10¢ for catalog of entire line to

PROTO TOOLS
2213 Santa Fe Ave., Los Angeles 54, Cal.
Eastern Factory, Jamestown, N.Y.
Canadian Factory, London, Ont.

Closed Socket Type Ratchet Wrench
⅜"—1-1/16" Openings

Crowfoot Type Ratchet Wrench
⅜"—3" Openings

In addition to the three types of ratchet wrenches shown above, the PROTO-TAC line includes ratcheting box wrenches, screwdriver attachments, rigid heads, and adapters for turnbuckles, standard sockets and internal wrenching.

PROTO TAC TOOLS
PROTO means PROfessional TOols

CONSTRUCTION
Volume 38 Number 4 **METHODS** Established 1919
AND EQUIPMENT

April 1956

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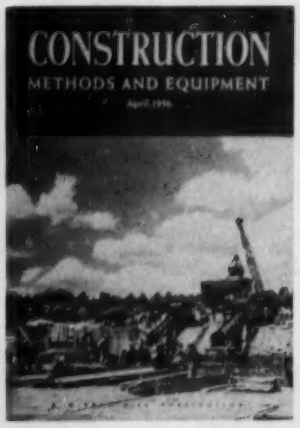

On the Cover

Fish Engineering Co., Houston, Tex., pours a 546-yd foundation mat for the New York Gas Co.'s pumping station at Harrison Valley, Pa. The pour took just 8 hr. Fish used two Jaeger 16-S mixers, discharging by chute into bottom dump buckets which supplied concrete parts.

CONCRETE WORK

Any contractor who does concrete work will find CM&E's series of articles on Concrete Mixing and Placing useful. Reprints are available in booklet form. Single copies are 50¢; for orders of 10 copies or more, the price is 40¢ each. Address your order to the Editor.

Member ABP

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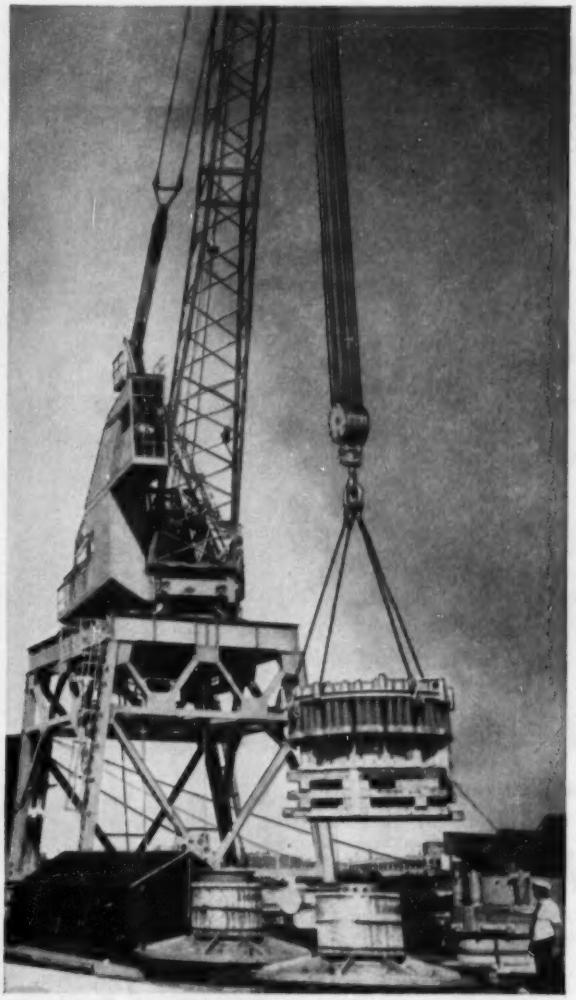

Whatever your needs, Macwhyte makes the sling, wire rope, or assembly for your equipment. Here, two ATLAS Assembly E-2, Round-Braided Slings handle cargo. These balanced braided slings have an excellent reputation for safe, fast, easy handling.

These wire rope products

SAVE TIME AND MONEY

The ability of wire rope to serve you relies on the quality you buy and the selection of the proper material.

Because Macwhyte Company has a wide selection of quality products, you can be sure the sling, wire rope, or wire rope assembly you buy meets the needs and service conditions of *your* equipment, and is designed to give outstanding service at low operating cost.

Your Macwhyte distributor will give you prices, literature, and catalogs, and can supply you promptly with standard or custom wire rope, cable assemblies, slings, aircraft cable, tie-rods, and swaged fittings.

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WIRE ROPE · SLINGS · WIRE ROPE ASSEMBLIES

Macwhyte Company, 2941 Fourteenth Avenue, Kenosha, Wis.

Manufacturers of: Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs available.

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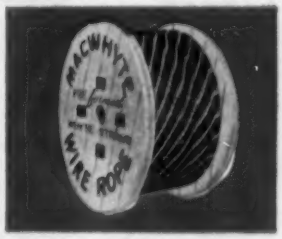
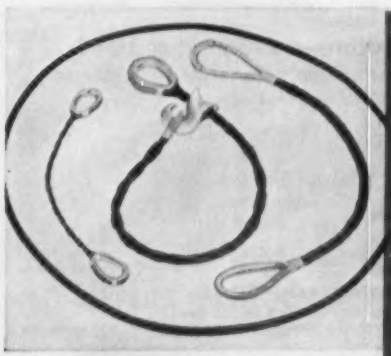
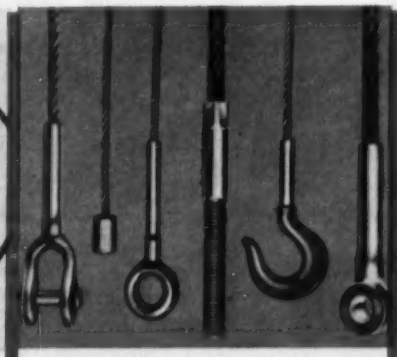


Distributors conveniently located throughout the United States.



BRAIDED SLINGS. Hundreds of custom and standard designs in Round-Braided, Flat-Braided, Single-Part and Grommet slings are supplied for almost any material handling need. *Catalog S-8 gives complete information.*



WIRE ROPE ASSEMBLIES. Macwhyte Safe-Lock Wire Rope Assemblies are made to order in length, strength, and flexibility desired. Terminals are permanently attached to one or both ends. A wide selection of fittings are made in strengths from 500 to 85,000 lbs. and up. *Request Catalog 5601.*

WIRE ROPE. There are *a thousand and one* sizes and types of Internally Lubricated Macwhyte wire rope to give you the *right* rope for any equipment need. *Catalog G-16 lists all wire rope classifications and sizes, as well as general information on use and handling.*

THE LATEST

VINYL PLASTIC WATERSTOP

for "wall-floor" and "between-pour" horizontal concrete construction joints

Water just can't get through joints protected by FLEXTRIP, the all-new, strip-type waterstop. Unique concave shape plus ribbed edges give FLEXTRIP a never ending grip in the concrete . . . is flexible enough to withstand extreme joint-separation (more than 3 inches) yet rigid enough to stand up to the battering effect of pouring concrete. Here's lasting joint-protection unmatched by any other waterstop. What's more, FLEXTRIP will never rust, rot, check or crack and is unaffected by acid, alkalies, petroleum products, chemicals or the most adverse atmospheric conditions . . . lasts as long as the concrete. Write for additional information on FLEXTRIP and other vinyl waterstops. Send coupon below.

Made by the makers of LABYRINTH WATERSTOPS . . . the standard watersaal on outstanding construction jobs everywhere — eliminates seepage problems . . . simplifies form work.

Made in Canada for J. E. Goodman Sales Ltd. Toronto, Ontario

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9 South Clinton • Dept. 2, Chicago 6, Ill.

Without obligation, please send me information o. your new FLEXTRIP and LABYRINTH WATERSTOPS.

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City_____ Zone_____ State_____

Pay Dirt in This Issue

April, 1956

New Ideas Speed Dam Building 62
Table Rock Dam is proving ground for closed-circuit television, 7½-ft lifts, and box-truss cantilever form.

Deck Paving at 10 Below Zero 68
Heated enclosures and insulated forms protect freshly placed concrete during very cold South Dakota winter.

Adjustable Girders Speed Slab Forming 70
Temporary stringers made from beam-type adjustable form supports eliminate 90% of normally required shores.

Wellpoints Solve Foundation Problem 74
Wellpoint system dewaters sandy foundation without lowering water table under adjacent building.

St. Lawrence is Year-Round Job 82
Seaway and power project contractors operate in temperatures as low as 25 deg below zero. See pictures.

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Inequities Boost Insurance Premiums 123
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Hot Mix for Cold Weather 124
Heated aggregate, hot mixing water, and warmed enclosures at pour site let Iroquois Dam concreting continue.

35-Ton Forms Speed Pier Repair 136
Contractor turns to huge prefabricated steel forms to pour gravity wall against ancient pier in Boston harbor.

Paving . . . How to Get the Best Results 153
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Comparative Scraper Specifications—1956 194
Charts lists comparative specifications for every make and model of tractor-drawn and self-propelled scraper.

Scrapers Feed Fill to Dredge 200
An ingenious application of an hydraulic dredge saves money for contractor on big highway sand-drain project.

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NEXT MONTH

Pushing a 2,400-ft open cut tunnel through the heart of busy downtown Boston without disturbing a heavy flow of traffic is a tricky job. Next month, CM&E will report on how V. Barletta Co. is solving this unusual problem.

Firestone NYLON TIRES

CUT DOWNTIME LOSSES AND REDUCE TIRE COSTS ON LARGE OR SMALL HIGHWAY CONSTRUCTION JOBS

TODAY'S fast highway construction timetables call for rugged, efficient earth moving equipment that is capable of top performance in all types of soil conditions.

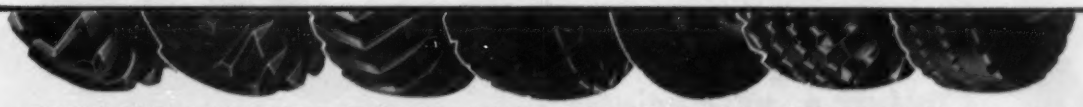
Earth moving units, like the one illustrated above, will maintain better schedules and cost less to operate if they roll on Firestone Nylon Tires.

Firestone Nylon Tires are built for the toughest service. The treads give maximum traction and they are extra tough to resist cutting. Double-thick sidewalls give added protection against cuts and snags.

Firestone's Safety-Tensioned Gum-Dipped nylon cord body gives greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Let your Firestone Dealer or Store show you how Firestone Nylon Tires will cut downtime and increase the profits on any job.

A TIRE FOR EVERY ROAD, LOAD AND CONDITION OF SERVICE



GROUND GRIP GG WIDE BASE ROCK GRIP RG WIDE BASE ALL NON-SKID ALL TRACTION RIB EXCAVATOR

WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES, SPECIFY FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC

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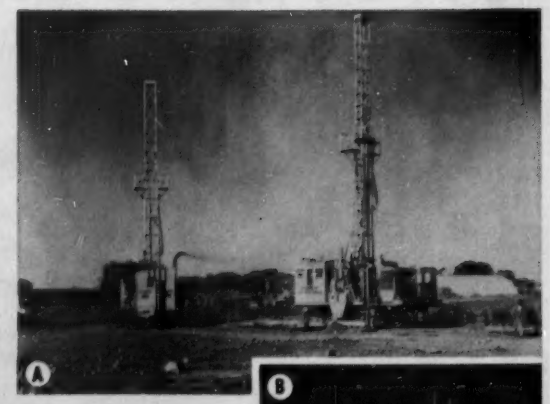
JOY DRILLS

on the St. Lawrence Seaway

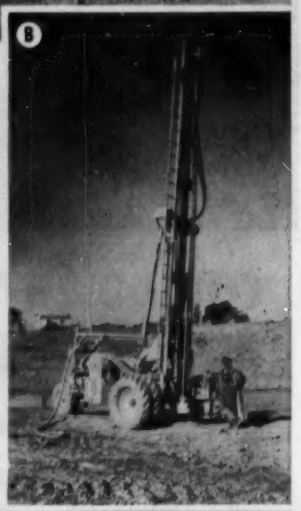
Unquestionably one of the greatest construction jobs of the century, the St. Lawrence Seaway has drawn top-flight contractors, engineers, and construction men from across the country. When completed, this joint power venture will provide 2½ million horsepower, as well as a deep-draft sea channel to mid-America.

A job of this magnitude calls for various sizes and types of drills, and Joy builds them all. During initial phases of the Seaway project, scores of Joy drills are already at work—hand-held drills, wagon drills, and blast-hole drills (both hammer and rotary) for large diameter holes.

Joy offers the most comprehensive line on the market today. Whether you are digging a seaway or a sewer, there are Joy drills for the job. For details write **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*



A *Here are two of the three big Joy Champion air-blast rotaries now on the Seaway project. Joy Champions drill up to 12" diameter holes.*



B *Six Joy Challengers, world's biggest hammer drill (5¼"), are working for three Seaway contractors.*

C *At work on the Canadian side is this Joy Trac-Drill. It mounts twin extensible jibs (with power lift and power swing) and a Joy air compressor.*

Write for FREE Bulletin 58-23

Consult a Joy Engineer

for AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS
CORE DRILLS • BLAST HOLE DRILLS • PORTABLE HOISTS • FANS
BLOWERS • TUNNEL, QUARRY, MINE EQUIPMENT

WSW C3575-58

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS
FOR OVER HALF A CENTURY

We made 'em TOUGH then... but they're TOUGHER today!

THE two pictures of Northwest Pullshovels on this page were made within a few weeks of each other. Take a look at the digging these machines are in.

The picture at the top shows a venerable Northwest Model 4 that has recently had its 27th birthday. It is shown laying bituminous coated pipe through rock on a sewer job at Bedford, Indiana.

The picture to the left, shows a Northwest Model 25 that is just a year-old youngster.

You can handle a lot of jobs with light equipment but what do you do when you're up against digging like this? The fact that you can take a 27-year old rig, built when no one thought of putting a pullshovel in rock, and get output in digging like this, illustrates what Northwest Plus Production means, better than anything.

We built 'em tough *then*, but we build 'em *tougher* today. Today as always they are built for the tough work and they bring you all the stamina that the best in modern engineering and design can bring. If you are planning on new Shovel, Crane, Dragline or Pullshovel equipment, talk it over with a Northwest man.

NORTHWEST ENGINEERING COMPANY
1503 Field Building • 135 South LaSalle Street
Chicago 3, Illinois

P25-2-1C

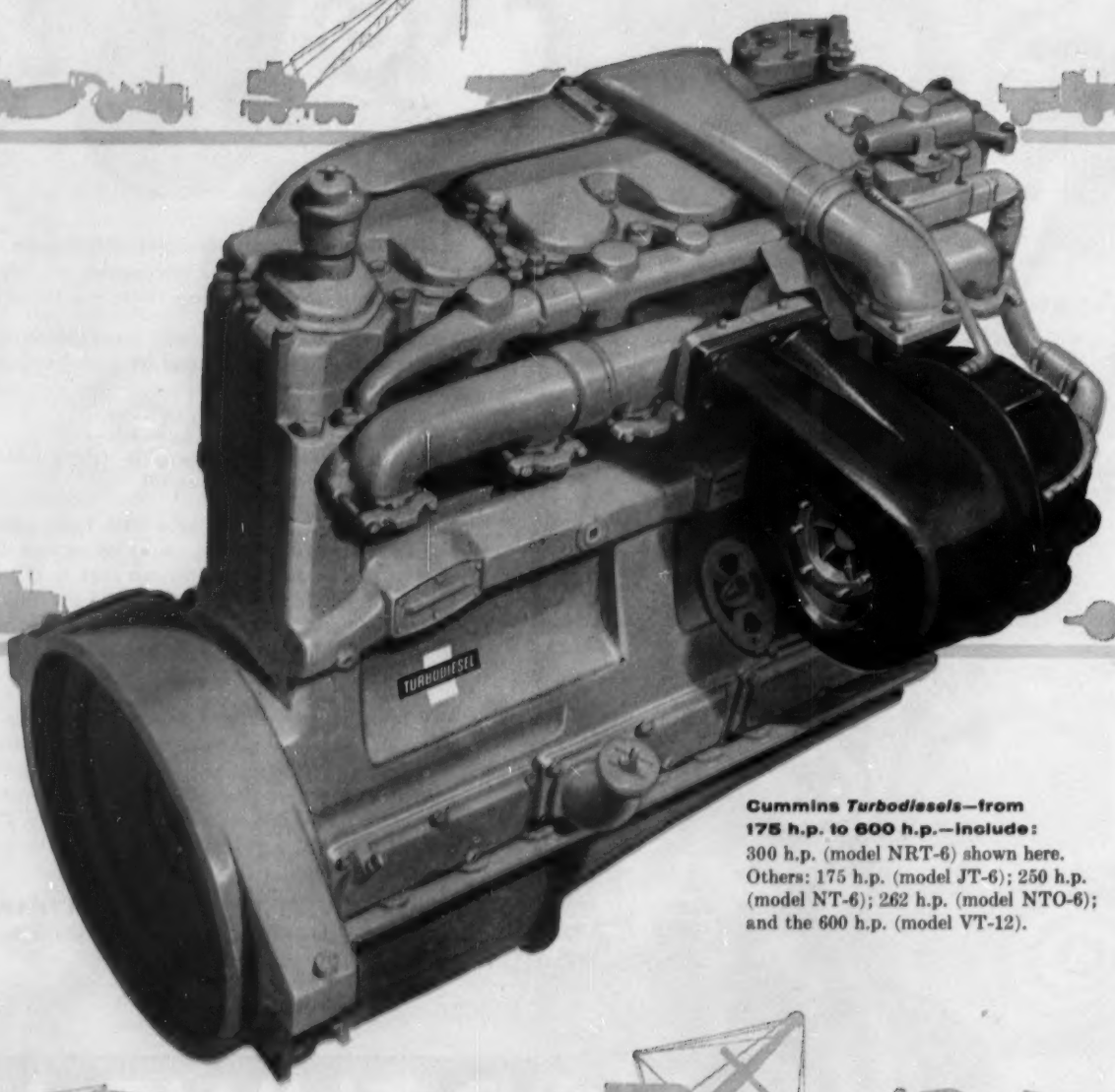
PRODUCTION PLUS · MEANS MONEY ·

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

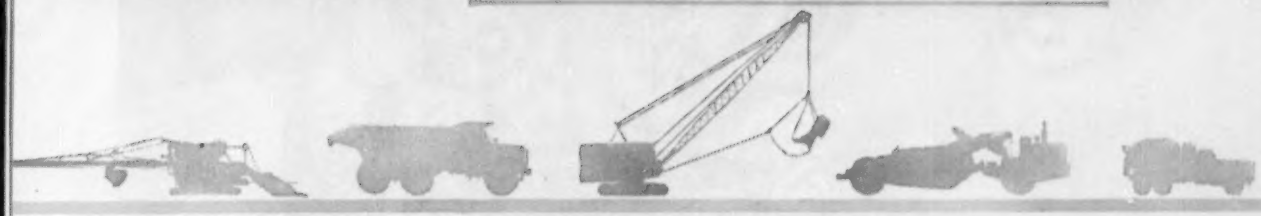
now available...from 175 h.p. to 600 h.p.

A COMPLETE LINE OF



Cummins *Turbodiesels*—from 175 h.p. to 600 h.p.—include:
300 h.p. (model NRT-6) shown here. Others: 175 h.p. (model JT-6); 250 h.p. (model NT-6); 262 h.p. (model NTO-6); and the 600 h.p. (model VT-12).

CUMMINS *TURBODIESELS!*



POWER!.....PERFORMANCE!.....PROFIT!

Here's a new power concept to make *your* construction jobs more profitable. Cummins Turbocharging brings you extra diesel horsepower by harnessing the energy in normally wasted exhaust gases . . . boosting engine efficiency.

Turbodiesel performance on all kinds of construction jobs show significant savings in time, fuel and equipment. And, like all Cummins Diesels, the new *Turbodiesels* feature the simple-to-understand-and-service PT fuel system and easy-as-gasoline maintenance. Added time-saving economy feature: Cummins nationwide distributor system makes sure that factory-type service and genuine Cummins parts are always near *your* operation.

No wonder *more and more construction men today are standardizing on Cummins Diesels.*

CUMMINS gives you the big plus **MORE PROFIT**

Get more information! Mail this coupon today! CM-4

Cummins Engine Company, Inc.
Columbus, Indiana

___ Send me a copy of the booklet "More Profit with Cummins *Turbodiesels*."

___ Send me a copy of the "Cummins Who's Who"—directory of manufacturers furnishing Cummins power in their equipment.

___ Have a Cummins representative call on me with *Turbodiesel* information.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

SEE THE Forty Five BEFORE YOU BUY

Here's motor grader design that pays off in extra output on today's tougher, more precise jobs. You get these big advantages when you put the FORTY FIVE to work for you—more power at the wheels, more dirt at the blade, plus precision control and ease of operation.

Allis-Chalmers diesel engine with follow-through combustion provides real lugging ability . . . responds quickly to varying load conditions . . . has the power with tandem drive to pull through soft spots, roll big windrows, peel off that last inch of tough, hard dirt.

ROLL-AWAY moldboard reduces friction drag by rolling the load up and ahead of the blade edge . . . moves more dirt with less effort . . . makes more efficient use of engine power on sloping, rough grading, stripping and other heavy-duty construction and maintenance jobs.

Toggle-type controls give the operator finger-tip command of every blade position, every job. Exclusive mechanical toggle-type action provides a positive "feel," yet operation of moldboard components, scarifier and front wheel lean is accurate and easy.

Get a demonstration of the FORTY FIVE from your Allis-Chalmers dealer . . . let him show you how fully-enclosed power steering, accelerator-decelerator pedal, "box seat" comfort and visibility, and other features give you an extra measure of performance on all your grading jobs. Check the complete service program he offers you . . . factory-trained servicemen and True Original Parts for high-quality service, continued top performance and long equipment life.

Forty Five
120 brake hp
23,800 lb
6 forward speeds
to 20.6 mph
3 reverse speeds
to 7.0 mph

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

A-C ALLIS-CHALMERS

ROLL-AWAY is an ALLIS-CHALMERS trademark

Construction News from Washington . . .

Washington, D.C.
April, 1956

Reclamation money flows out

The Bureau of Reclamation will shift into high gear with the approval by Congress of the $760 million Upper Colorado River Storage Project. Plans now call for $8 million of spending during the year beginning next July, about $15 million during the following year, and $60 million to $70 million for the third and fourth years. Contract awards are expected to total about $200 million during the first three years. Glen Canyon Dam gets top priority; it will take about three years to build this dam, and it will cost some $420 million when all its equipment is installed.

Lease-purchase bids invitations out

Both the General Services Administration and the Post Office Department are calling first bids on lease-purchase projects this month. Plans and specifications for a dozen buildings are ready to go. GSA plans to put out invitations first on four or five buildings costing $1 million to $2 million each — including projects at Rock Island, Ill., Council Bluffs, Iowa, and Green Bay, Wis. The $12 million communicable disease center for Public Health Service at Atlanta, Ga., also is close to the bid invitation stage.

Post Office Department expects to call for bids on half a dozen buildings this month. A $4 million Detroit terminal annex is among those expected to be ready for invitation soon. Regional offices now have brochures and bid forms.

Here is roundup of Post Office Department's five-year program totaling $780 million.

These amounts will be spent in the next five years to modernize the nation's postal plant:

$230 million of private capital in about 3,500 new lease-purchase buildings; $225 million of federal funds for new lighting, painting, air conditioning, and deferred maintenance of government-owned postal buildings; $200 million of government money to modernize about 60% of existing government-owned postal space; $125 million for mechanical equipment to handle mail.

Materials are ready for big highway program

Congressmen working on the multi-billion dollar highway program are heartened by a new report from the American Road Builders' Association. ARBA took another look at the ability of the industry to meet demands of a new program. It found resources of materials,

equipment, engineering talent, and contractor capacity more than adequate to meet anticipated demand.

Recent shortages of cement and structural steel shapes had inspired concern that a big, new highway program could be added to the present boom level of construction without severe price pressures.

Top ARBA officials told the House roads subcommittee last month that the industry is expanding rapidly enough to handle demands even larger than the highway program contemplates.

Eisenhower favors big public works

Construction stands to gain from Eisenhower's decision to be a candidate again. The reasoning goes like this, according to top construction experts in Washington:

The President and his team have all along favored bigger public works spending programs, more Federal aid to housing, and the like. Approval of the $760 million Upper Colorado Storage Project is a case in point. It was facing opposition up to the last minute when Eisenhower said he wanted it approved; this came on the same day as his announcement that he would run again.

Eisenhower can swing other big construction programs, too, if he chooses to come out strong for them—as he will be pressured to do by Congressmen who want to carry their particular districts this fall.

Already, Eisenhower has decided to take another look at three big dams in Oklahoma and Arkansas. Congress last year voted starting money for them over the President's opposition; now he is having them looked at again to see whether he shouldn't ask for the money to get these projects, totaling $400 million, started this year.

Spending for plant expansion heads up

The government's latest survey of industry's plans for building new plant and equipment is a sure sign that the boom is likely to continue through the rest of the year.

The figures show that total spending in this key sector of the economy in 1956 will be 22% over actual spending last year—$34.9 billion as compared with 1955's all-time high of $28.7 billion. More than $10 billion of the money will go into construction of new plant facilities.

Another key survey also throws light on the business outlook. The Federal Reserve Board reports that consumer "intentions to buy" during the year ahead aren't tapering off. Early this year some 9.6% of consumers surveyed planned to buy houses, compared to 9.4% who planned to buy a year ago. On home improvements, 22.6% plan to spend this year, compared with 22.7% who planned to buy at this time last year.

New from Pure Oil TOUGHEST CHASSIS GREASE EVER MADE

New Purelube Heavy Duty Chassis Grease lasts up to 2½ times longer than other chassis greases

New Purelube Heavy Duty Chassis Grease is tougher than other chassis greases you've been able to buy. The most rugged tests show this new grease stays on the job up to 2½ times longer than greases generally used for chassis lubrication.

Prove it to yourself, in your own equipment, under your own operating conditions.

Pick out two similar pieces of your equipment operating side by side. Lubricate one of them with new Purelube Heavy Duty Chassis Grease. Use any competitive grease you choose on the other. Then compare the results and see the difference for yourself.

Mail the coupon or call your nearest Pure Oil office for a free demonstration on your own equipment. (Offer limited to fleets operating in PURE'S marketing area.)

PURE

Be sure with Pure

Sales offices located in more than 500 cities in PURE'S marketing area.

SEND FOR FREE FOLDER

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☐ Please send me free folder giving complete information on new Purelube Heavy Duty Chassis Grease.

☐ I would like a free demonstration of this new chassis grease.

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Gardner-Denver . . . Serving the World's

NEW super portable

ROTARY 900 SPECIFICATIONS:

Compressor Model	RP900DA
Delivery, cfm	900
Operating Pressure, psi	100
Control	*New* Simplified Thriftmeter
Length	13′ 9″
Width	6′ 9″
Height	8′ 5″
Turning Radius	18′
Weight, dry	12,790 lb.

Gardner-Denver Rotary 900

Gives you—Extra air capacity for bigger drills or more of 'em—without additional engines and equipment to care for. For heavy rock cuts, for quarries, for open pit mines—wherever compressed air in volume can help speed the work.

Plus—all the outstanding Gardner-Denver features which have made the Gardner-Denver Rotary 600 so popular among users. Clutch for easy cold-weather starting. Circulating water system for warming up the compressor before it turns over. Water-cooling for steady running in any weather. Super-simplicity for complete inspection, easy field maintenance.

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Gardner-Denver Company, Quincy, Illinois

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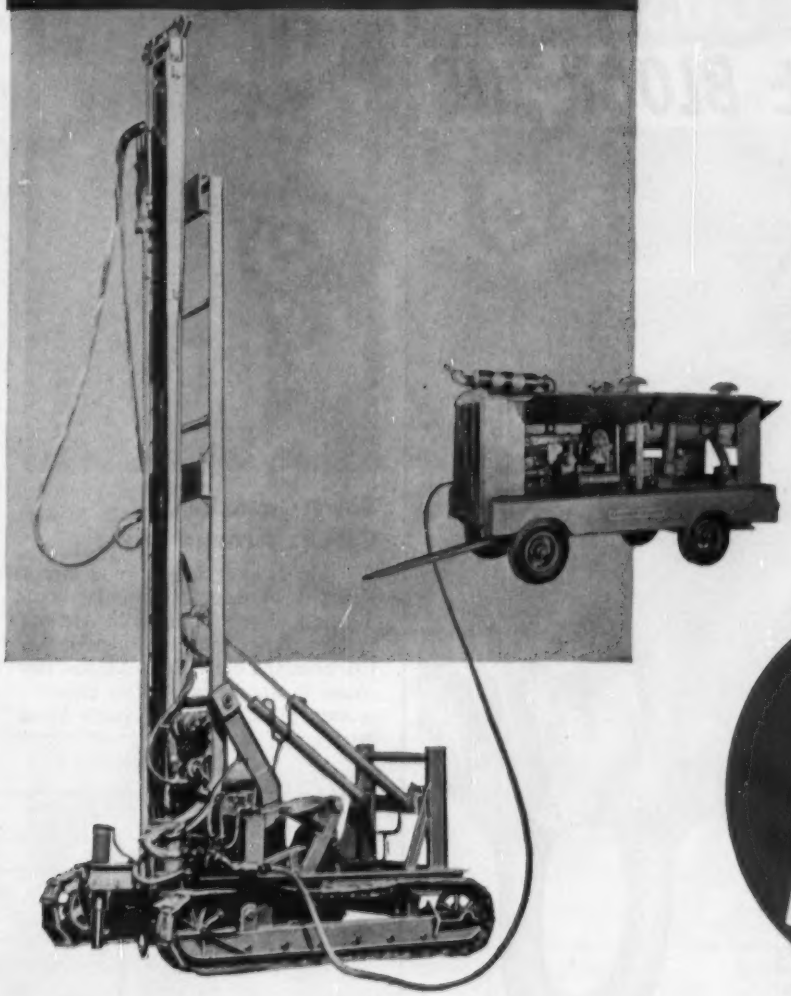
Basic Industries



DH143 SPECIFICATIONS:

Hammer Diameter	5½"
Drill Rod Size	1⅞" hex.
Approximate Weight, complete crawler-mounted drill	10,500 lb.
Rod Change, up to	20'
Height, Mast at Vertical	29'
Length	11'
Width	8½'

NEW *super* rock drill

Gardner-Denver 5½" DH143

Gives you—an entirely new rock drill class for heavy-duty rock work in pits, in quarries, in open cuts. Now you can select the proper bit size and plan the proper hole spacing for best breakage in any ground. Simplified operation—all controls are conveniently mounted at the operator's station.

Plus—The dependability, economy and hole-cleaning ability which have made Gardner-Denver Rock Drills famous wherever rock work is encountered. Available with a new Gardner-Denver air-powered crawler, or for mounting on your own heavy diesel tractor. Send for the facts today!

There's a Gardner-Denver distributor in your area—
see him for details

Cuts Your Cost for EVERY TACKLE BLOCK JOB

CORRECTLY ENGINEERED

● Because they're designed and engineered for specific tasks, you'll find MADESCO blocks with heavy steel shells and fittings your *safest* choice. In materials, in construction too, Madesco tackle blocks assure you the extra service that comes from over thirty years of specialized experience and "know-how." Buy Madesco blocks and you make substantial savings on your rope costs, because Madesco sheaves (of iron or steel graphite bronze) are correctly-grooved to prolong rope-life. Loads travel smoothly, easily, quickly to save lifting time; that means savings too that come from minimized maintenance and down-time. There's a complete line of Madesco tackle blocks for every need. Consult your industrial distributor—and meantime write for our catalog.

MADESCO TACKLE BLOCK CO., Easton, Pa.

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SPECIAL FORGINGS
are also available for varied needs. Write us. Remember too, we quickly furnish
SPECIAL BLOCKS
FITTINGS
REPLACEMENT SHEAVES
designed, engineered and load-rated to your specifications.

WORTH ASKING FOR—BY NAME

MAE—MA—183 156

Job Talk . . .

Baby Clamshell Cleans Around Piles

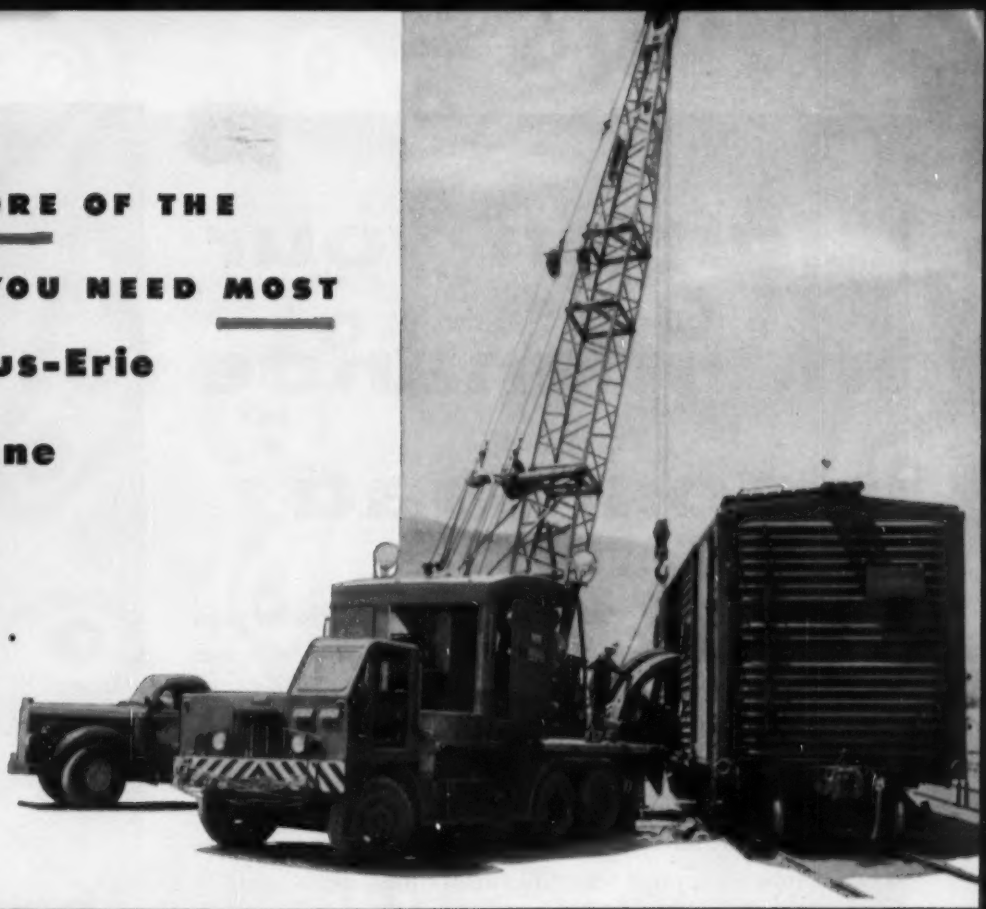
A ⅜-yd bucket does a good job of cleaning between wood piles on a big hangar job at Idlewild Airport in New York. Horn Construction Co. likes the baby Haiss bucket because it fits between the closely-spaced piles, reducing costly hand labor.

Diesel Pile Hammer Hits Fast and Hard

A diesel pile hammer that develops 20,000 ft-lb of energy is doing a fast, economical job of driving sand drains near Camden, N. J. Hercules Concrete Pile Co. of West New York, N. J., is driving 50-ft drains at rates of up to 18 per hr. Riding in the leads of a Manitowoc crane, the big Syntron hammer

(Continued on page 21)

YOU GET MORE OF THE FEATURES YOU NEED MOST in a Bucyrus-Erie Transit Crane



HERE'S PROOF....

Your Bucyrus-Erie distributor can give you plenty more!

FEATURE	MODEL 15-B	MODEL 22-B	HOW YOU BENEFIT
Friction swing brake.	Standard	Standard	Operator can spot and hold boom point over desired position.
Power controlled lowering for main hoist line on lifting crane.	Standard	Standard	Provides high accuracy in lifting or lowering loads.
Independent power boom hoist with power controlled lowering.	Standard	Standard	Boom angle can be changed while machine is swinging or propelling, while load is being hoisted or lowered.
Open-throat boom design.	Standard	Standard	Permits rigging 2, 3, or 4 parts of line without removing sheave guards.
8-part pendant suspension.	Standard	Standard	Ideal for changing boom lengths conveniently and with minimum downtime.
Safety boom stops on all machines equipped for lifting crane service.	Standard	Standard	Added safety. Prevents boom from accidentally snapping over center and striking cab.
Boom angle indicator.	Standard	Standard	Enables operator to determine angle of boom at all times.
Full 3-side vision from operator's cab.	Standard	Standard	Gives him clear view of his entire operating range and of all men or obstructions in the vicinity.
16-part boom suspension.	Optional at extra cost	Optional at extra cost	Provides slower boom hoisting or lowering for even greater precision control.
Boom folding mechanism.	Optional at extra cost	Optional at extra cost	Booms over 60 feet long can be carried folded on job-to-job moves.

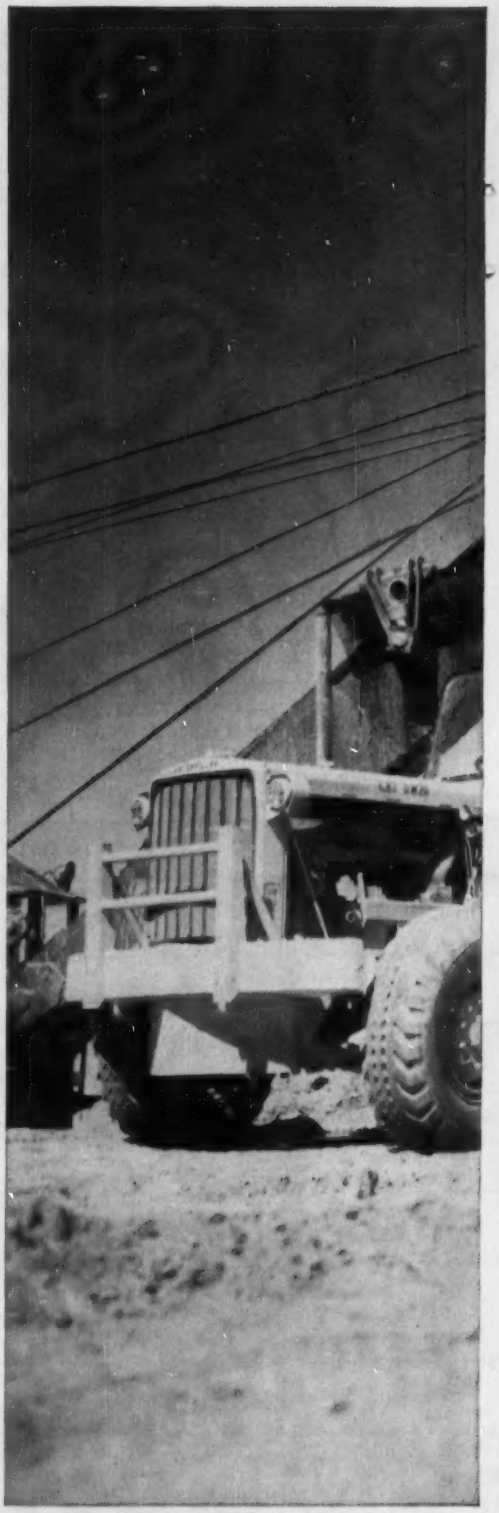
BUCYRUS ERIE

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

176E55C

Lighten your maintenance cost load



EVEN in off-highway service, *Texaco Marfak* gives chassis parts full protection. That's because heavy loads won't squeeze it out, bumpy roads won't pound it out. You get long extra life for all chassis parts because of *Marfak's* longer lasting protection against wear and rust.

In wheel bearings, use *Texaco Marfak Heavy Duty.* It seals out dirt and moisture, seals itself in to assure extra thousands of miles between lube jobs, extra long life for bearings, extra safety in braking. No seasonal change is required.

For contractors who want *just one* lubricant to handle chassis, wheel bearing, water pump and other grease lubrication, there is the new lithium-base *Texaco Marfak Heavy Duty Special 2.* It pumps easily and lubricates effectively even at winter temperatures. It resists water washing and stands up in severest service.

More than 625 million pounds of Texaco Marfak have been sold

Also use: *Texaco Track Roll Lubricant* to reduce maintenance costs of your crawler mechanisms. *Texaco Universal Gear Lubricant EP* to assure smooth functioning transmissions and differentials.

Call on Texaco Lubrication Engineering Service for help in simplifying and improving your maintenance lubrication. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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starring
JIMMY DURANTE
on TV Saturday nights.
METROPOLITAN OPERA
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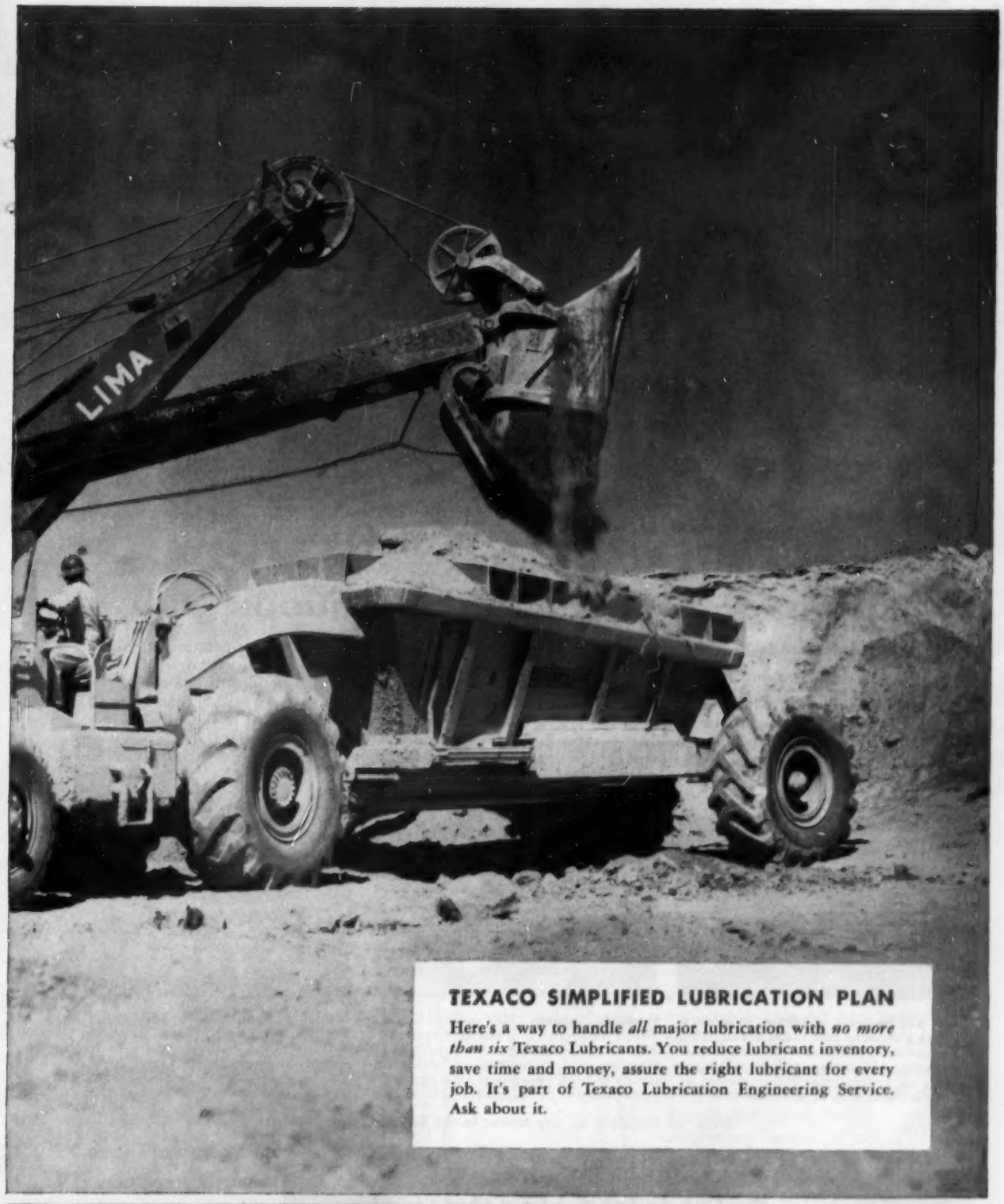
Saturday afternoons.

TEXACO



TEXACO SIMPLIFIED LUBRICATION PLAN

Here's a way to handle *all* major lubrication with *no more than six* Texaco Lubricants. You reduce lubricant inventory, save time and money, assure the right lubricant for every job. It's part of Texaco Lubrication Engineering Service. Ask about it.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Model 543. No machine or method can equal the low cost loading of this Barber-Greene loader. High travel speed, high capacity and finger tip discharge control save job time, man time, truck time.

Cut loading costs the continuous way

In a Massachusetts sand and gravel pit, a Barber-Greene Model 543 Bucket Loader handles 900 tons of ¾″ stone every day—easily tops all other methods in truck loading operations.

The 543 is ideal for the all-day-long loading operations of one truck after another because its continuous flow maintains maximum capacity regardless of the skill or zeal of the operator.

Its simple operation makes it easy for drivers to load their own trucks. A hydraulically controlled swivel conveyor has the reach to load highest and longest trucks and trim the load to full capacity every time. And this versatile loader can be easily converted into a coal, snow or leaf loader.

Model 550 removes windrows in a hurry . . . with a capacity that keeps ahead of all trucks normally available. This light, highly maneuverable machine reduces windrow loading to lowest cost. Self-propelled at 10 m.p.h., with a turning radius of 8′ 6″.

Model 82A moves 1200 yards in 8 hours. That's the record of a Barber-Greene in a New York building and supply yard. Handles sand, stone, coal and other materials at high capacities. Easy operation permits driver to load his own truck.

Model 582 speeds topsoil stripping. Crawler mounted for sure footing on all soft bases, and equipped with a hydraulic swivel conveyor, the 582 is the fast, profitable way to load from stockpile, windrow or bank or to make light excavations.

56-38L

Write for literature on any loader in the Barber-Greene line

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

JOB TALK . . .

Continued from page 16

strikes 80 times a min. Average driving time is only one min.

Hercules is sold on diesel hammers because they cut costs. The only supporting piece of equipment required for sand-drain work is a small compressor which forces the mandrel out of the ground. And

on conventional pile driving, even that would be unnecessary.

Fuel costs are very low, and no big steam or air equipment is required. Besides, the rig is simple to set up. Almost as soon as it arrives on the job it can begin driving. There are no hoses to connect; the operator simply drops the ram and the hammer starts.

Coral Plowed Under Tracks and Crushed

A steel plow mounted on the dozer arms of a Caterpillar D8 windrows scarified coral rock in front of the tracks where it is crushed. The coral can then be excavated by scrapers. Made by Homestead Machine and Electric, Ltd., the rig is

(Continued on page 24)

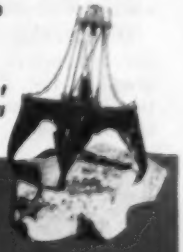
It will take a "heap" of sand and gravel to make the concrete necessary for the tremendous road building programs forthcoming and presently under way.

From past experience, batch plants and construction jobs everywhere know they can rely on their OWEN BUCKETS to handle the loads from cars to pile and from piles to hoppers.

Owen material handling buckets are available in a wide range of types and sizes to best suit your particular needs.

Write for the general purpose and material handling OWEN BUCKET Catalog and get all the enlightening facts.

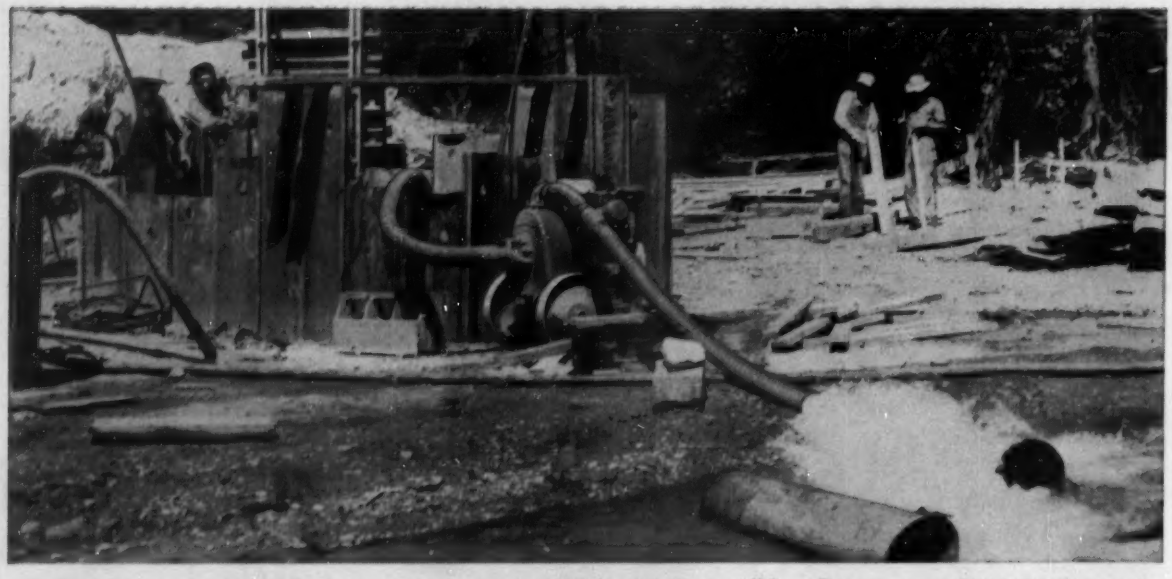
Manufacturers of the independent line action grapples for handling rock, scrap and pulpwood.



THE OWEN BUCKET CO.

6020 Breakwater Ave. • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.



PUMPING HEAVY INFLOW FROM PIER COFFERDAM was handled by this Jaeger 3″ Sure Prime pump, of 20,000 gph capacity.

INSIDE DEWATERED COFFERDAM, workmen place reinforcing steel for pier foundation. Job is one of 4 reinforced concrete bridges on State Route 26 between Arkadelphia and Antoine, Arkansas. W. C. Burrow, contractor.

When you're in a hole, you want a Jaeger pump

We've yet to meet an experienced contractor who wouldn't bet his shirt on a Jaeger "Sure Prime" pump when the chips were down.

Disregarding "claims", he knows that only a Jaeger has two independent, simultaneous priming actions to give him fast, doubly sure priming when he needs it — that a Jaeger primes and pumps at easier, engine-saving speeds (actually 300 to 600 rpm slower than some pumps claiming equal capacity) — that it is the only pump in which the shaft seal is positively lubricated and provided with a ready-inspection port.

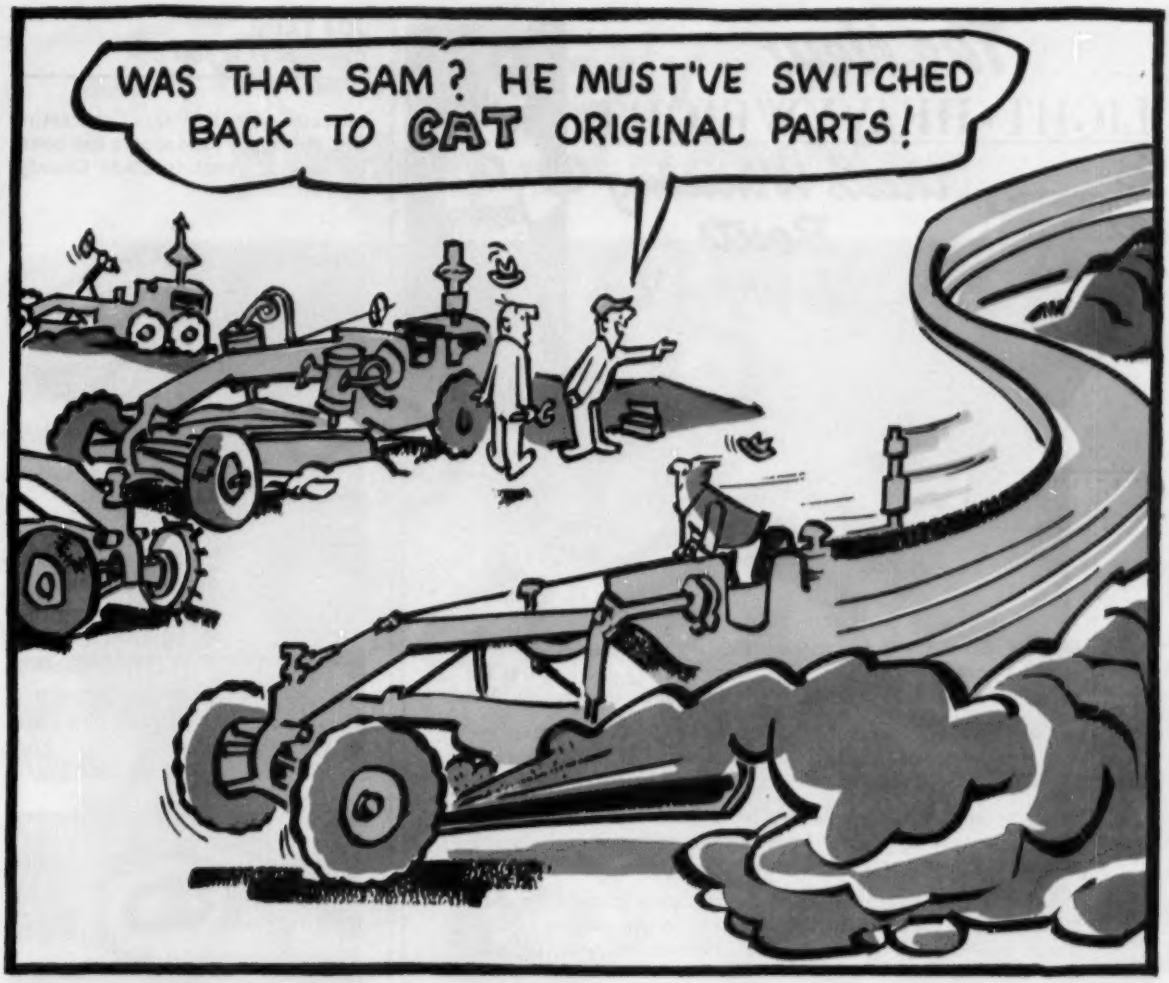
For any capacity up to 240,000 gph, or pressure up to 275 psi, there's a Jaeger pump you can depend on to do your job. Check with your Jaeger distributor — or send for Catalog P4.

50th year JAEGER CONSTRUCTION EQUIPMENT

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • MIXERS • TRUCK MIXERS • SPREADERS • FINISHERS • LOADERS



Take it from Sam. Beware of "just as good" substitutes.

A cutting edge for your CAT* Motor Grader, for example. Caterpillar original cutting edges are made from only top-quality high-carbon steel—carefully pretested. Or scarifiers. If they're Caterpillar, the shanks are strong steel forgings mounted in a heavy cast steel block. Their replaceable teeth of forged alloy steel are selectively heat treated to resist wear.

You're sure of more dependable performance on any kind of job when you use only Cat cutting edges and scarifier teeth.

With substitute parts, can you be sure of anything?

See your dealer's Parts Representative—better get Caterpillar original parts every time.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Cat original motor grader cutting edges and scarifier teeth are the results of never-ending metallurgical research. They match the all-around performance of the quality machines they work with.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

The New LIGHT★HEAVYWEIGHT that's Winning Bouts Everywhere

Rogers Brothers were among the very first to use alloy steel to obtain lightness with strength. They use it today in all main beams and in other positions where it is advisable.

Here is a comparatively recent Rogers development — a trailer designed primarily for lightness but with strength to haul loads reasonably in excess of its rated capacity.

It's priced right and is available in the popular capacities. The rear Type "T" horizontal rocking members are one of our most popular units.

Since almost every rigger and contractor should be able to use one of these trailers in addition to his present equipment, write today for complete information. Ask for the new catalog.

✓Check and you'll choose a ROGERS

EXPERIENCE builds 'em ROGERS PERFORMANCE sells 'em

ROGERS BROS. CORP.
ALBION, PENNA.

Export Office: 50 Church St., New York 7, N.Y., U.S.A. Cable Address: BROSITES

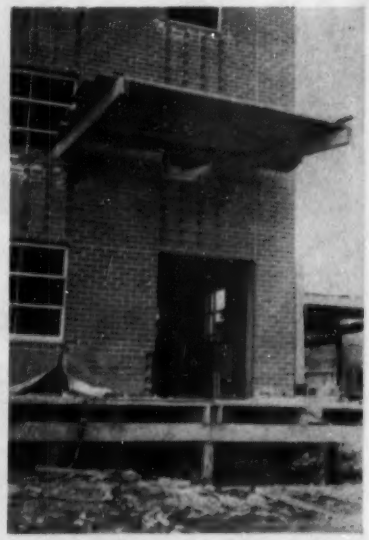
220 Orchard Street

Divided bed, tilt deck trailer with gooseneck.

JOB TALK . . .

Continued from page 21

operated by D.W.D. Contracting Co., Perrine, Florida, on a big housing development in Dade County, Florida.



Covered Entrances Protect Workers

A protective covering over a building entrance is a sure sign of a safe job. Falling objects can cause severe injuries, and it's worth the small amount of trouble to erect a cover. On a New York housing job, John A. Johnson & Sons, Inc., of Brooklyn, N. Y., covers many entrances by simply cantilevering beams out of windows and covering with planks.

Slash costly pitting and patching

PHOTO COURTESY QUEBEC HYDRO-ELECTRIC COMMISSION

use GLOBE FORM GREASE

for all Concrete Forms →

On job after job, engineers and contractors prove continually Globe Form Grease the definite cost-cutter that reduces peeling and pitting to a minimum and practically eliminates patching in concrete work after steel or wooden forms are removed.

The reason is simple, Borne, Scrymser's Globe Form Grease is a time-tested paste emulsion with exceptional adhering qualities applied with spray, brush, or swab. For utmost effectiveness — only a thin coat is required. Consequently one gallon covers approximately 200 square feet! And more — Globe Form Grease is stainless — leaving a smoother, whiter concrete surface without painting.

Prove to yourself why Globe Form Grease is truly the "wonder grease" for every concrete form. Write for full particulars today.

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Our Laboratory Facilities are always at your disposal.

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RUBARITE — New Powdered Rubber for Tomorrow's Asphalt Construction.

BORNE, SCRYMSER COMPANY

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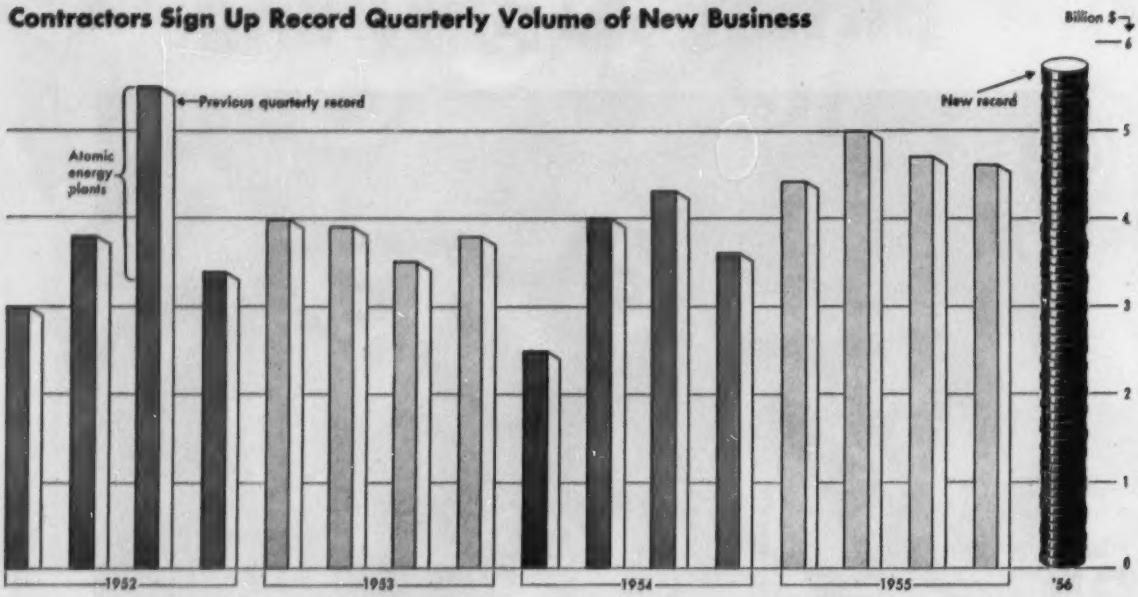
Contractors Sign Up Record Quarterly Volume of New Business



First Quarter New Business Sets Fantastic Pace, Awards Hit $5.8 Billion, Highest Quarter Ever

HEAVY CONSTRUCTION contractors entered new work in their books at a dizzy pace during the first three months of this year. Contract awards mushroomed to nearly $5.8 billion, a thumping 32% increase over a year ago. It was the largest volume of new work ever taken on in a single three-month period, even topping the third quarter of 1952 when three huge atomic energy plant awards supplied an upward thrust of more than $2 billion.

Well on their way to new records this year are highways, sewerage, earthwork-irrigation-drainage, and commercial building. In fact, all major types of work except private mass housing are running higher than last year—and by healthy margins. Highway contract awards climbed 26% ahead of last year, and bridge contracts are up more than expected with a gain of 66% over the first quarter of 1955. Other big gains are in sewerage, up 83% and earthwork-irrigation-drainage, up 98%.

Building construction is also booming, sparked by industrial building, which zoomed 163% ahead of 1955 during the first quarter, and commercial building, which chalked up a 38% gain. A big increase in school construction is the key to a 15% increase in awards for public building other than housing. Public-housing is up very sharply this year, leading the first quarter of 1955 by 126%.

The record-breaking volume of contracts so far this year has pushed awards above the year-ago mark in every region. The biggest percentage gains are in New England, Middle Atlantic, West of the Mississippi, and Far West.

Industrial Expansion Spree May Set Award Record

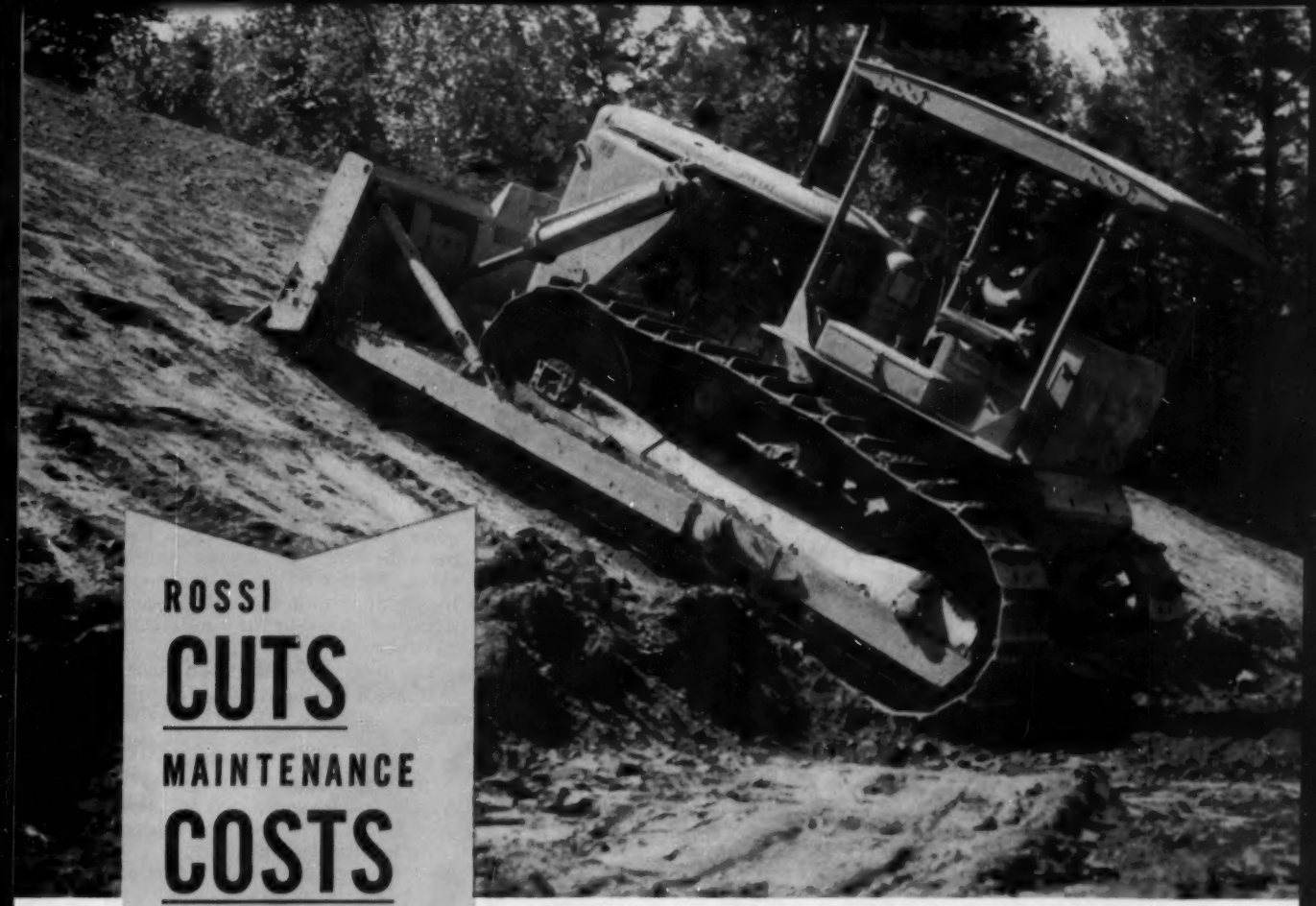
Industrial building contracts may reach a new high this year. First quarter contracts boomed at a rate surpassed only by the forced-draft defense expansion in 1951, following the outbreak of war in Korea. Awards so far this year are two and one-half times the 1955 volume.

There are two big reasons for expecting the current upsurge in industrial awards to continue. While contracts have been let at a staggering pace, new projects are being planned in even greater volume. Industrial projects proposed during the first two months of 1956 had a total estimated cost of nearly $1.2 billion. This was three times the volume proposed in the same two months of 1955. This, plus a heavy volume of projects proposed in 1955, has pushed sharply upward the backlog of industrial building in the planning stage. As of February 19, this backlog topped $15 billion, 29% above a year ago.

The other promising indicator for industrial construction is the 22% increase planned this year for plant and equipment spending by U. S. business, much of which will go for plant construction. The $35 billion the SEC-Dept of Commerce estimates is planned for plant and equipment would be a record volume. Both the contract awards so far in 1956 and spending plans show the industrial expansion spree includes all major industries. Furthermore, every region of the country is sharing in the surge of plant construction contracts.

Steel Will Be Short Through '56

The current critical shortage of heavy structural steel shapes prob-



ROSSI CUTS MAINTENANCE COSTS WITH CAT-BUILT EQUIPMENT

S. V. Rossi Construction Co., of Torrington, Conn., has found it pays to keep accurate records of machine costs. Here's a report by Mr. Adolph Rossi:

"When we buy a machine we figure the maintenance cost over a season. We've found there's no comparison—Caterpillar-built equipment has it over all other makes. We started in 1930 with machines built by two other manufacturers. Later we started trading them for Cat-built equipment because we had seen the light. Now we have all Caterpillar Diesel Tractors."

One of the machines in the Rossi fleet is the CAT* D7 Tractor with No. 7S Bulldozer, shown here grading a slope on a road construction job between Bethel and Woodstock, Vermont.

The D7 is a long-time favorite with contractors—a rugged, dependable producer. Today the *new* D7 (Series C) gives you the added advantage of a 128 HP engine and 28,700 pounds maximum drawbar pull. It has the long-wearing Caterpillar oil clutch; a gear driven balancer that gives smoother performance; a new starting engine with more power, and simple, single-lever control for easier operation. Track shoes are hardened by the "water-quench" process for longer life than ever.

Get the full facts about the new line of big yellow tractors from your Caterpillar Dealer. He'll give you a demonstration right on your job, and prove the claim of lower maintenance cost with facts. He offers reliable 24-hour service as well as a full stock of Caterpillar parts—parts you can trust. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

ably will get worse in the months ahead. Furthermore, the shortage is not expected to end until some time in 1957. Even though steel mills and structural steel fabricators will increase shipments to construction substantially this year, new orders are coming in so fast they can't make a big enough dent in backlogs to improve slow deliveries. In addition, the strong possibility of a steel strike looms as a threat to aggravate the steel supply situation at mid-year.

A check of major cities by CM&E during mid-March showed up structural steel shortages in Birmingham, Boston, Chicago, Cincinnati, Dallas, Denver, Detroit, Los Angeles, Minneapolis, Philadelphia, Pittsburgh, Seattle, Montreal, and Toronto. Warehouse deliveries are slow, running as long as 12 months in Chicago.

Concrete reinforcing bars are also short in several cities: Birmingham, Chicago, Denver, Detroit, Philadelphia, Pittsburgh, Montreal, and Toronto. Warehouses in these cities are generally making deliveries within three months.

Lumber and Steel Hikes Raise Costs

Contractors are finding increased lumber and steel prices have added to construction costs in many cities this year. Lumber prices have gone up because of three-way pressure from the higher freight rates effective March 7, the boost in the minimum wage to $1, and the poor weather in the Pacific Northwest.

The new minimum wage meant that some southern lumber mills had to raise certain wage scales. They've been passing along the resultant increase in costs to the contractor. This, plus the rail freight rise, have pushed southern pine prices to a new record high.

Additional freight charges and poor weather are behind a firming up of Douglas fir prices in several cities. Not only has production been upset by bad elements, but transportation has been disrupted and deliveries are slow to some midwestern and eastern cities.

Steel warehousers in several cities have upped prices of structural steel and reinforcing bars. In most instances, the increases are sizable and are in addition to the sharp rises which the warehouses were forced to add when the steel mills raised their prices last July.

Warehouse prices of structural steel and reinforcing bars have moved up during the last three months in Baltimore, Cincinnati, Denver, Minneapolis, New York, and San Francisco. Structurals are also higher in Chicago, Detroit, Philadelphia, and St. Louis.

The structural steel price increases vary widely by city. In about half of the cities, prices are up 15¢ per cwt. However, Philadelphia prices rose 90¢ per cwt. Baltimore and New York went up 40¢, and San Francisco added 35¢. Percentagewise, these larger increases amounted to 13.6% in Philadelphia and 5 to 7% in Baltimore, New York and San Francisco.

(Continued on page 32)

Only SEAMAN-GUNNISON
OF BARABOO, WISCONSIN
Gives you DUO-PACTION

with the DUO-PACTOR

...a new concept in soil consolidation!

The Duo-Pactor incorporates the steel roller and 8-wheel pneumatic roller in *one* unit, offering the following advantages:

- Non-conforming wheel spacing of the Duo-Pactor prevents direct tracking in drive roll tracks.
- Steel roll is hydraulically lowered to "iron out" ridges left by pneumatic tires.
- Oscillation of rear-roll tires torsionally controlled.
- Sprung rear-roll assembly. Heavy-duty leaf spring provides wide range of vertical travel of rear roll in pairs . . . easily removable for service.
- DUO-PACTION! The combination of unequally spaced pneumatic tires and the ridge-correcting steel roll maintains grade and surface finish throughout rolling period.
- Full power steering . . . makes non-stop turnarounds on 18-foot road and easy handling on back and forth rolling.

Write for details on Duo-Pactor and Gunnison one-man forward control bituminous distributors.

COMPRESSION
in lbs per lineal inch

	Empty	Fully Ballasted
Steel	104	425
Rubber	94	400
Both Steel and Rubber	50	200
Drive Roll	150	300

Spring-mounted oscillating wheels knead surface.

SEAMAN-GUNNISON CORPORATION
Baraboo, Wisconsin

SEAMAN-GUNNISON CORP.
Baraboo, Wisconsin

Send details on Duo-Pactor

Name.....

Street.....

City.....State.....

"Trojan H-2 Multi-Purpose Grease Lasts 25% Longer Than Any Used Before!"

Around Council Bluffs, when there's earth to be moved, Dofner's the man. Excavating for roads, house, or building construction, he keeps his 21 dump trucks and other equipment in constant operation to fulfill his heavy job schedule.

But you'd never know this by the amount of gasolene or lubrication required. "The fact is," says Dofner, "I've found Cities Service Trojan H-2 Multi-Purpose Grease lasts 25% longer than any other grease I've ever used. And my dump trucks are actually running an average of 10 hours apiece and getting as high as 20 loads on one tankful of Cities Service Gasolene. Needless to say, I'm sold on Cities Service!"

Again and again, Cities Service receives reports such as this from construction men. If you'd like to know the reasons why, talk with a Cities Service Lubrication Engineer. Or write Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

MORE OF DOFNER'S EQUIPMENT AT WORK. Although he keeps it in almost constant operation, Dofner reports he's never lost a bearing and goes 25% longer between greasings since he switched to Trojan H-2 Multi-Purpose Grease.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Bigger Capacity...

This new, 1956 model HO "PAYLOADER" has a bucket capacity of 2¼ cu. yd. payload, 1¾ cu. yd. struck . . . is the biggest-capacity "PAYLOADER" ever offered, and outstanding by any measure. Pound for pound, it's ahead of the field in digging power and carrying capacity. It's more maneuverable, faster operating, easier operating, easier riding—with or without a load—than anything near its size. It delivers better, more reliable traction over a wider range of ground conditions than any wheeled tractor-shovel *ever* has. It has balanced design and durability *throughout* to deliver big yardage day after day without interruption.

HOUGH Design . . Quality . . Value

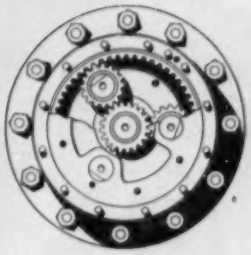
Digging power: Pound for pound, this "PAYLOADER" has more traction and digging power—for a wider range of ground conditions—than any wheeled tractor-shovel ever built.

Hydraulic shock absorber: A shock absorber in the hydraulic system smooths out the ride, permits faster load-carrying speeds over rough terrain—with less spillage.

More production, less effort: Power-steer, power brakes (on all 4 wheels), power shift (no "clutching") and good riding qualities also lessen operator fatigue—promote full production all day.

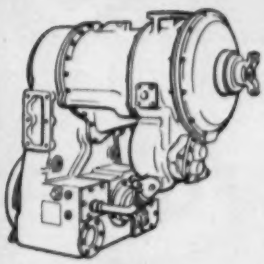
"Stay-clean" hydraulic system: The hydraulic system is closed and pressure-controlled to keep air and dirt from being sucked into the system. This reduces oil foaming, lessens trouble and increases the life of pump, valves, cylinders, rod packings. Both boom and bucket rams are located so as to minimize their exposure to dirt and damage.

Accessible: Unusual accessibility for servicing and maintenance is built into this "PAYLOADER." Battery and oil reservoir are located under an easy-access cover just behind driver's seat. Easy access to engine is possible from either side—and not hindered by boom arms or other structure. "Pick-off" outlet is provided for the easy addition of hydraulically-operated accessories.



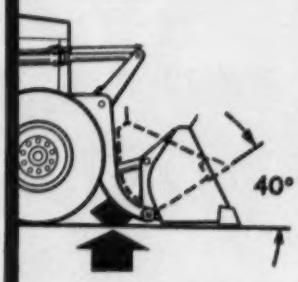
Long-life, high-traction drive train

Heavy duty planetary final drives in the wheel hubs, and hypoid differential gearing, keep torque low in axles . . . prolong life of axles and *all* drive train parts. More effective traction is assured by the use of the model HO torque-proportioning differentials. If one wheel starts to slip, more power is delivered to the opposite wheel. The wheel with the better traction automatically gets up to 24% more torque.



Complete power-shift transmission

The easiest-acting, most effective transmission ever built into a tractor-shovel. *All Shifts* up or down can be made instantly, on-the-go under full engine speed. There's no foot clutch, no stopping for a RANGE shift. The forward-reverse control can also be operated under full engine speed, in any gear, while retaining full bucket action . . . all this, plus torque-converter drive.



Tremendous pry-out action and 40° tip-back at ground level

Special pads are provided on the bottom of the boom arms to give ground support for powerful pry-out action. Load forces are also absorbed by the pads, relieving the axles and wheels of these strains. The bucket can tip back 40 degrees, before raising, to get heaped loads quick and easy even in shallow cuts and low piles, and to retain heaped loads.

Better Performance

If you want the last word in tractor-shovel workability on your jobs, you'll want this husky HO "PAYLOADER". Your Hough Distributor is ready to give you full information.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.

Send full information on "PAYLOADER" 4-wheel-drive tractor-shovels

☐ model HO—2¼ cu. yd. ☐ model HS—1½ cu. yd. ☐ model HU—1 cu. yd.

Name_____

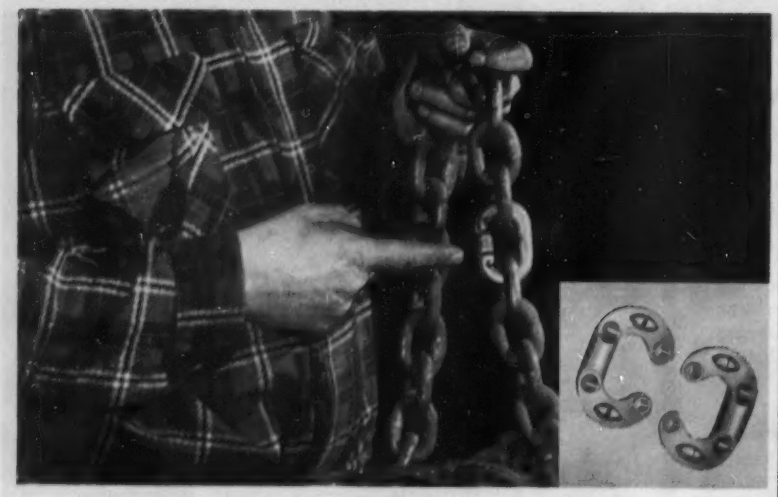
Title_____

Company_____

Street_____

City_____ State_____

(Advertisement)



"WORLD'S STRONGEST LINK"

Actually stronger than proof-coil chain, famous Laughlin genuine "Missing Links" give an added element of safety on the job to men and equipment. Safety-conscious contractors say, "For safety's sake, we always specify Laughlin, the world's strongest split connecting link." Drop-forged from special forging steel and heat-treated, Laughlin genuine "Missing Links" are matched under pressure for a perfect fit. They are available in a complete range of sizes ¼" to 1⅞" at distributors everywhere.

SAFETY RECORD FOR CROSBY CLIPS, BLOCKS

Working efficiently means working safely. Two products designed for safety as well as efficiency—genuine Crosby Clips and Load-Rated Crosby Blocks—are helping set safety records

on projects across the country. Long-recognized as industry's safest clips, Crosby Clips, with the famous Red-U-Bolt, are specified by more construction firms than any other drop-forged wire rope fasteners.

To safeguard men and equipment, Load-Rated Crosby Blocks have the safe working capacity of each block embossed right on the sideplates. To help keep your jobs safer, insist on genuine Crosby Clips and Crosby Blocks . . . products of the Crosby Products Division, American Hoist & Derrick Co., St. Paul 1, Minnesota.

THE PERFECT COMBINATION

Maximum strength without the brittleness that can cause fracture under shock load—the result of a perfect combination of design, steel and drop forging used in Laughlin Shackles. Hefty pins are forged from the same quality steel. Your Laughlin Distributor has shackles in ⅜" to 3". sizes!

RIGGERS WANT SAFETY HOOK

Jobs where one miscue can endanger men and equipment require the safest possible equipment. To prevent loads jarring from the hook—a major cause of accidents—safety leaders specify Laughlin Safety Hooks. Drop-forged Laughlin Safety Hooks are equipped with a powerful, easy-to-operate snap spring latch that guarantees loads cannot slip or jar from the hook and prevents overloading the hook with too many lines. Here's another safe, efficient Laughlin product from the world's most complete line of fittings in all sizes for wire rope and chain. For complete catalog, write: Thomas Laughlin Division, American Hoist & Derrick Co., St. Paul 1, Minnesota, or Portland, Maine.

IT'S YOUR BUSINESS . . .

Continued from page 28

Equipment Prices Now Steady

The uptrend in manufacturers' prices for excavating and earth-moving equipment is taking a breather so far this year. During the first two months of 1956 the BLS Index moved up a slight 0.3%.

But while equipment price tags seem set for a while, average prices are 7.2% higher than a year ago. Most of this rise came in the short space of three months from August to October, 1955.

SOME BIG CONTRACT AWARDS OF THE MONTH

H. B. Zachry Construction Div., Box 2570, San Antonio, Tex. Wesley E. Seale Dam on Nueces River, Corpus Christi, Tex. for lower Nueces Water Supply District c/o V. Jaeggli, Mgr., 211 Weber Bldg., Corpus Christi, Tex. $6,700,000.

George A. Fuller Construction Co., 111 W. Washington St., Chicago, Ill. Six story cooperative office building, on Wacker Dr., Chicago, Ill. for Adams-Monroe Wacker Corp., c/o Arthur Rublon & Co., agt., 100 W. Monroe St, Chicago, Ill. $17,500,000.

The Savin Construction Corp., Div. Merritt-Chapman & Scott Corp.'s Construction Department, 10 Village St., East Hartford, Conn. Ohio River locks as part of New Cumberland Locks and Dam Project, Ohio and West Virginia for U. S. Engineers, 925 Federal Bldg., Pittsburgh 19, Pa. $16,312,765.

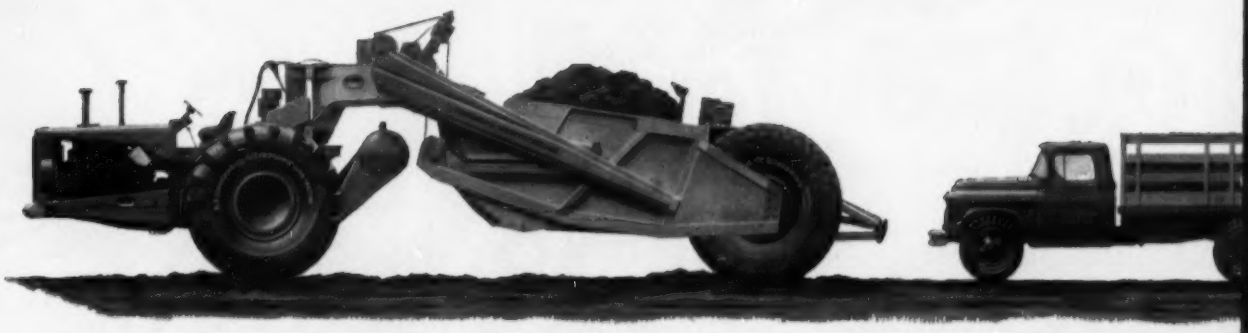
Milton Construction & Supply Co., 7567 St. Charles Rock Rd., Overland 14, Mo. Three thousand brick residences at Jennings, Mo. for Vorhof-Duenke Real Estate Co., 7567 St. Charles Rock Rd., Overland 14, Mo. $15,000,000.

Austin Co., 618 Grand Ave., Oakland, Calif. Five office buildings and underground parking at San Mateo, Calif. for Fifth Ave. Corp. of Calif., 335 Hayes St., San Francisco, Calif. $6,000,000.

Howard S. Wright & Co., 414 Pontius St., Seattle, Wash. Paper

(Continued on page 268)

B.F.Goodrich tires hand



LeTourneau-Westinghouse Model B Tournapull and Model B Scraper measure 40′-6″, tower 12′-7″. Tournapull can make 90° left and right turns. Scraper holds 25 cubic yards heaped. Tires shown are B. F. Goodrich Super Traction on drive wheels and Earth Mover Traction on trailing wheels.

Chevrolet Task-Force stake truck Model 6409 carrie load of 13,300 pounds in a load space measuring 144 B. F. Goodrich All-Purpose tires are designed for t truck that does a variety of on and off-the-road wo

This massive **Mack** LRVSW dumper is designed for mining, stripping and earth-moving projects. 30-ton payloads roll on such tires as the B. F. Goodrich Rock Logger and Universal. Diesel engine develops 400-h.p.

Oliver 4-wheel, open-top twin-cable scrapers in the 4C series have a cutting blade up to 113″ long, can carry up to 17.5 cubic yards of dirt.

Michigan Model TMDT-16 is a general purpose 12½-ton excavator-crane fully convertible to all standard front end attachments. The boom is 17′-3″ long, has a diameter of 12¾″.

Koehring Dumptor unloads 16,500-lb. payload in one second. No turns are necessary at shovel or dump because speeds are the same in forward or reverse.

Haul- **Inter** Super

B.F.Goodrich tires hand

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Haul
Inter
Supe

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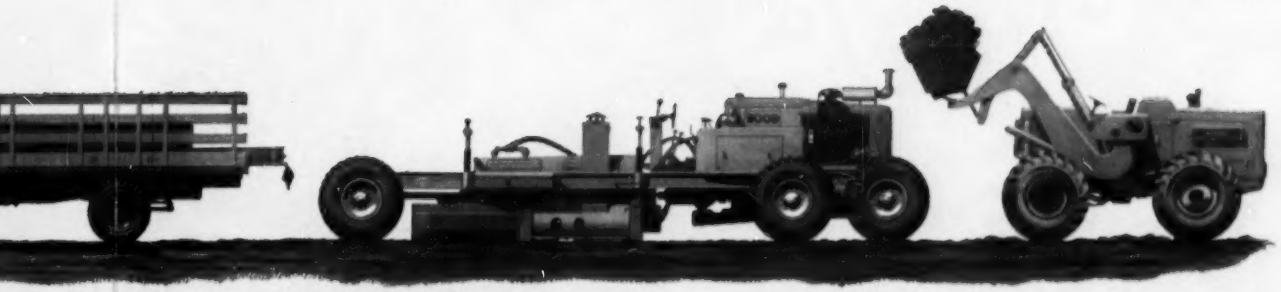
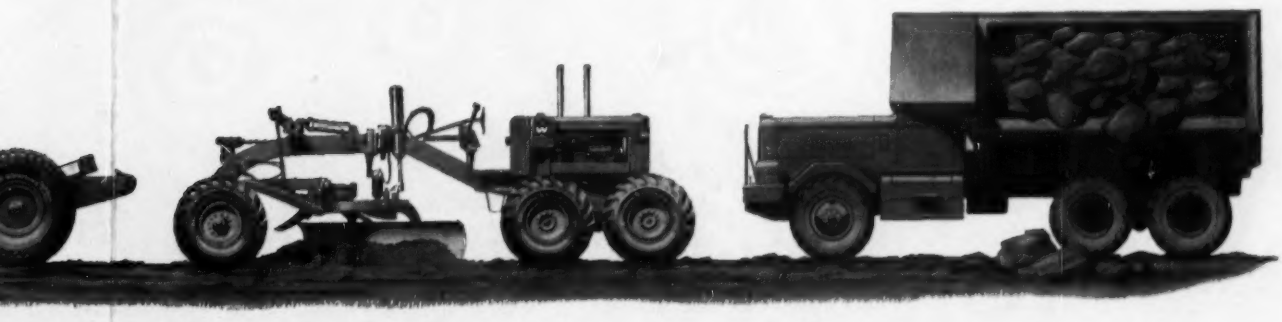


del 6409 carries a pay-
neasuring 144″ x 85″.
esigned for this type
F-the-road work.

Up to ¾ of a mile of 24-foot roadway, 3″ thick, can be produced by the **Pettibone Wood** Model 42 Roadmixer in an 8-hour day. This machine mixes cement or asphalt for highway, airport or parking area construction.

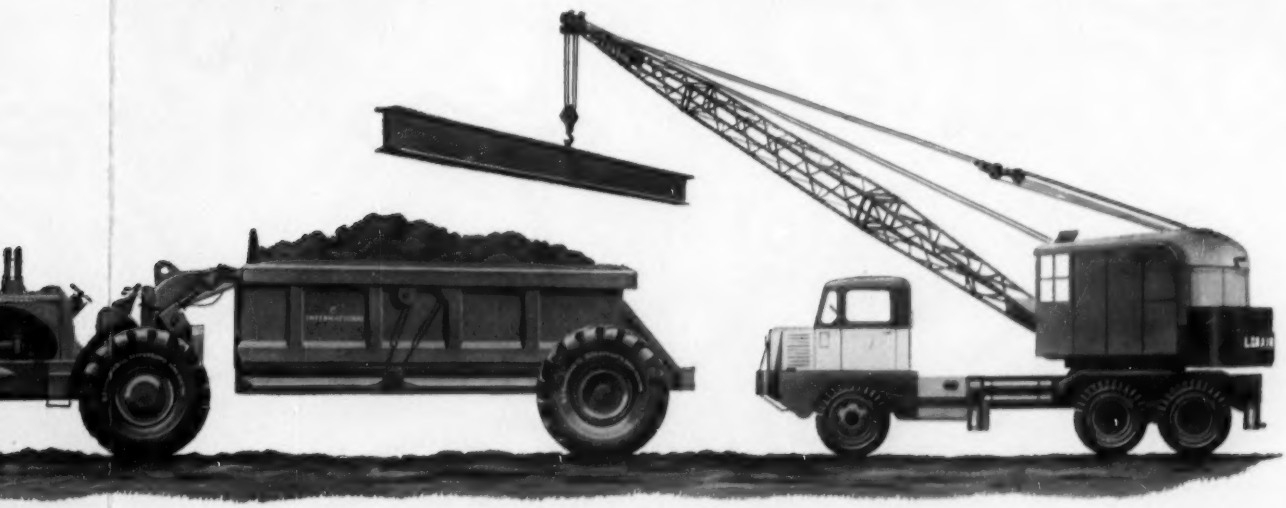
The bucket of this **Hough Payloader** raises to a maximum height of 16′-1″ from a digging depth of 12″ below the ground. Four-wheel drive, with 14.00-24 tires, provides maximum traction.



4C series
to 17.5

Grading, maintenance, snow removal, scarifying, bank sloping and ditching are just a few of the jobs for which **Huber-Warco** motor graders are designed.

Side-dumping **White** Autocar DC-10364S-OH carries a truck load of 12 cubic yards. Truck weighs nearly 22 tons, rolls on 10 B. F. Goodrich Rock Logger tires.

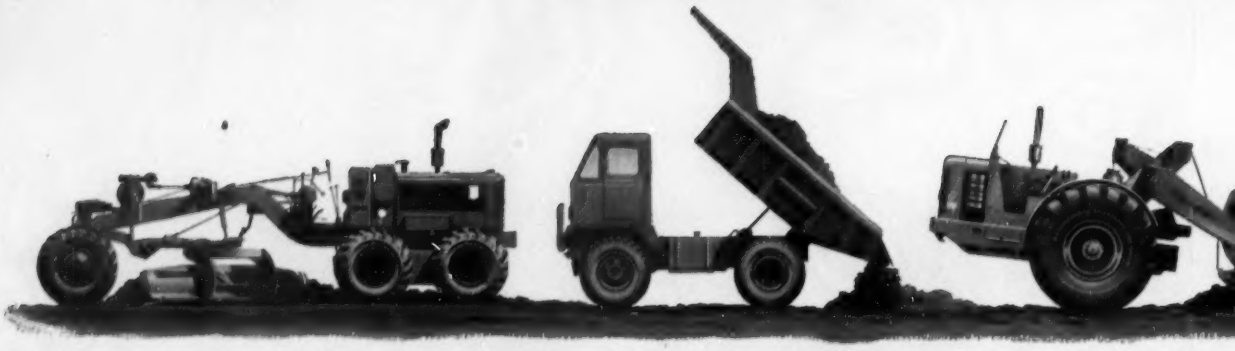


Haul-road speeds up to 24 mph, fully loaded, are a feature of the **International** Model 75 Paywagon. Tires are B. F. Goodrich Super Traction.

Thew Shovel's Lorain MC-524 Moto-Crane handles everything from loading logs to erecting steel.

Lift Page

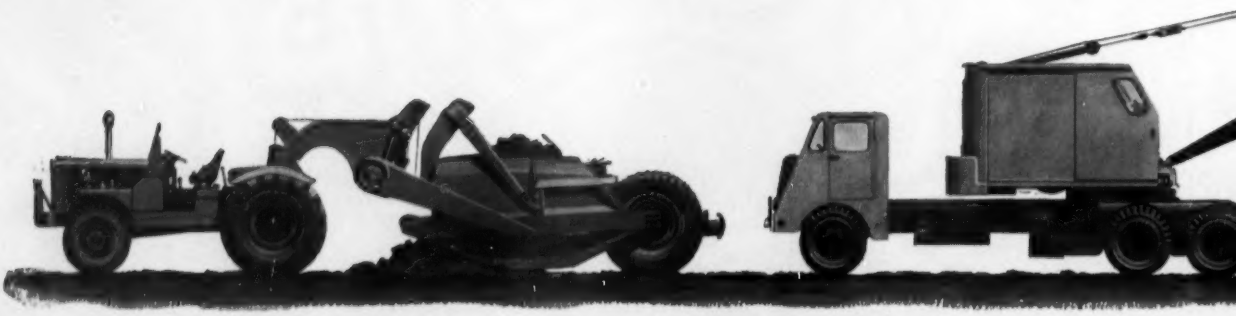
B.F.Goodrich Par



The **Adams** No. 660 Diesel Motor Grader has 8 forward speeds up to 26 miles per hour, 4 reverse speeds up to 13.7 miles per hour. Unit rolls on 14.00-24 Tractor Grader Lug tires.

The body of this **Dart** Model 10-S truck rises to a height of 18 feet in dumping position, dumps at a 60-degree angle. Unit comes equipped with B. F. Goodrich Universal tires.

Double-Safety air brakes, ing, direct electric startir cable control are among **Allis-Chalmers** TS-360 M



Caterpillar DW15 tractor with matched No. 15 scraper has 150-horsepower engine. Tires shown are B. F. Goodrich Ribbed Universal (front), Super Traction (drive), Earth Mover Traction (scraper).

Bay City CraneMobile may be used as crane, clamshell, dragline or pile driver. Maximum lifting capacity 25 tons. Will handle booms up to 110 feet plus 30-foot jibs.

These B. F. Goodrich tires kee

ALL-PURPOSE tires work on paved or dirt roads or in the rough on such jobs as logging, sand and gravel hauling, excavating, etc. *All-nylon* or rayon construction. Sizes 6.00-16 through 12.00-24.

UNIVERSAL tires are designed for power wheels on trucks and tractors that pull trailer equipment or for free-rolling wheels in severe service. *All-nylon* construction. Sizes 7.00-15 through 24.00-29.

TRACTOR GRADER tires deliver power to road graders, tractors and other equipment used in construction and road maintenance work. *All-nylon* or rayon construction. Sizes 9.00-24 to 18.00-26.

EARTH MOVER TRACTIO tires are designed for free-ro ing wheels on scrapers, eart moving wagons and oth pulled equipment. *All-nyl* construction. Sizes 14.00-20 24.00-29.

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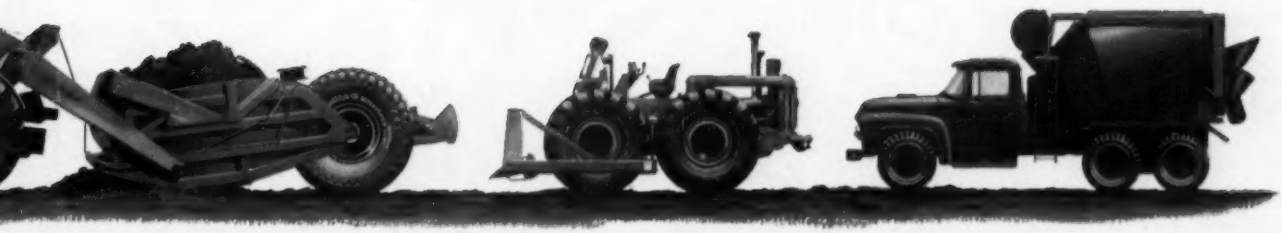


air brakes, selective-speed steer-ectric starting and multiple-disc are among the features of the **rs** TS-360 Motor Scraper.

Attachments for the **Le-Tourneau-Westinghouse** Model C Tournatractor include bulldozer (above), logging winch, tree stinger, scraper, V-type snow plow, root rake and angledozer.

Tubeless tires, power steering and tachometer are standard equipment on this **Ford** transit mix truck in the T-800 series. You have choice of 190-h.p. or 200-h.p. Y-block V-8 engine.

ell, ons.

Austin-Western Super 99 Power Grader features 6-wheel drive and 6-wheel steering. Blade rotates 360° and raises 90° right or left. Tires are 13.00-24, 10 ply low pressure.

B. F. Goodrich Universal tires are shown on this **Euclid** Model FFD 34-ton rear-dump truck. Capacity is 28 cu. yds. heaped for payload weight of 68,000 lbs.

keep construction work rolling

TRACTION for free-roll-trapers, earth-s and other nt. *All-nylon* es 14.00-20 to

SUPER TRACTION tires work in sand, loam and mud on drive wheels of large dirt-moving rigs. For free-rolling wheels in reversed position. *All-nylon* construction. Sizes 18.00-25 to 24.00-29.

ROCK LOGGER tires are built for drive and front wheels on dump and logging trucks, cement mix trucks, quarry and construction machinery. *All-nylon* construction. Sizes 8.25-20 to 14.00-24.

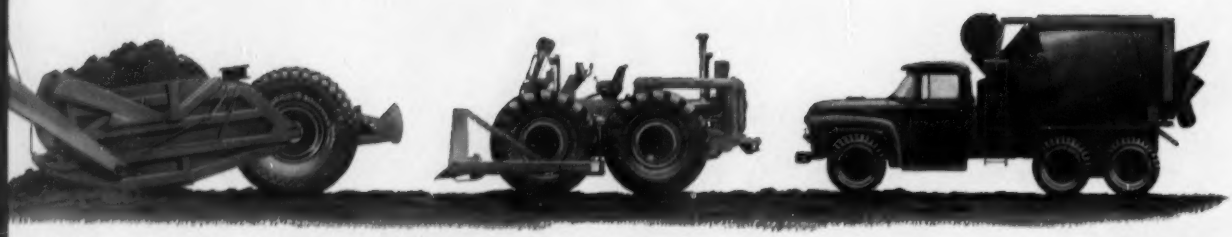
SPECIAL compounding for extra toughness, special tread designs for every kind of work, special *all-nylon* cord bodies that outwear even the extra-thick tread and can be recapped over and over—these are some of the advantages B. F. Goodrich builds into its off-the-road tires. If you want lower operating costs and longer, trouble-free tire service, see your B. F. Goodrich retailer today. On-the-job service is available coast to coast from B. F. Goodrich retailers. *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

Your B. F. Goodrich retailer is listed under Tires in the Yellow Pages of your phone book

B.F.Goodrich
FIRST IN RUBBER

Specify B. F. Goodrich tires when ordering new equipment

rade of Power



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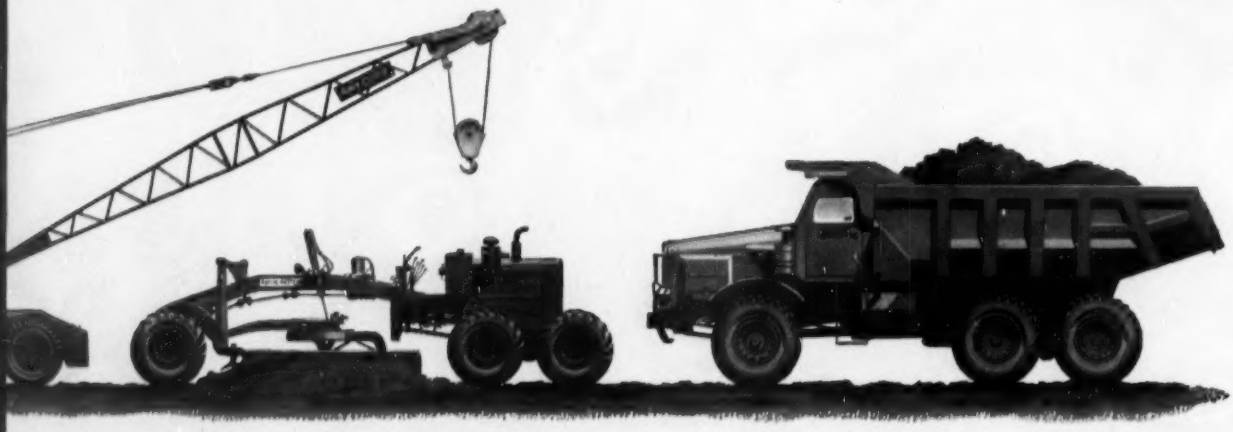

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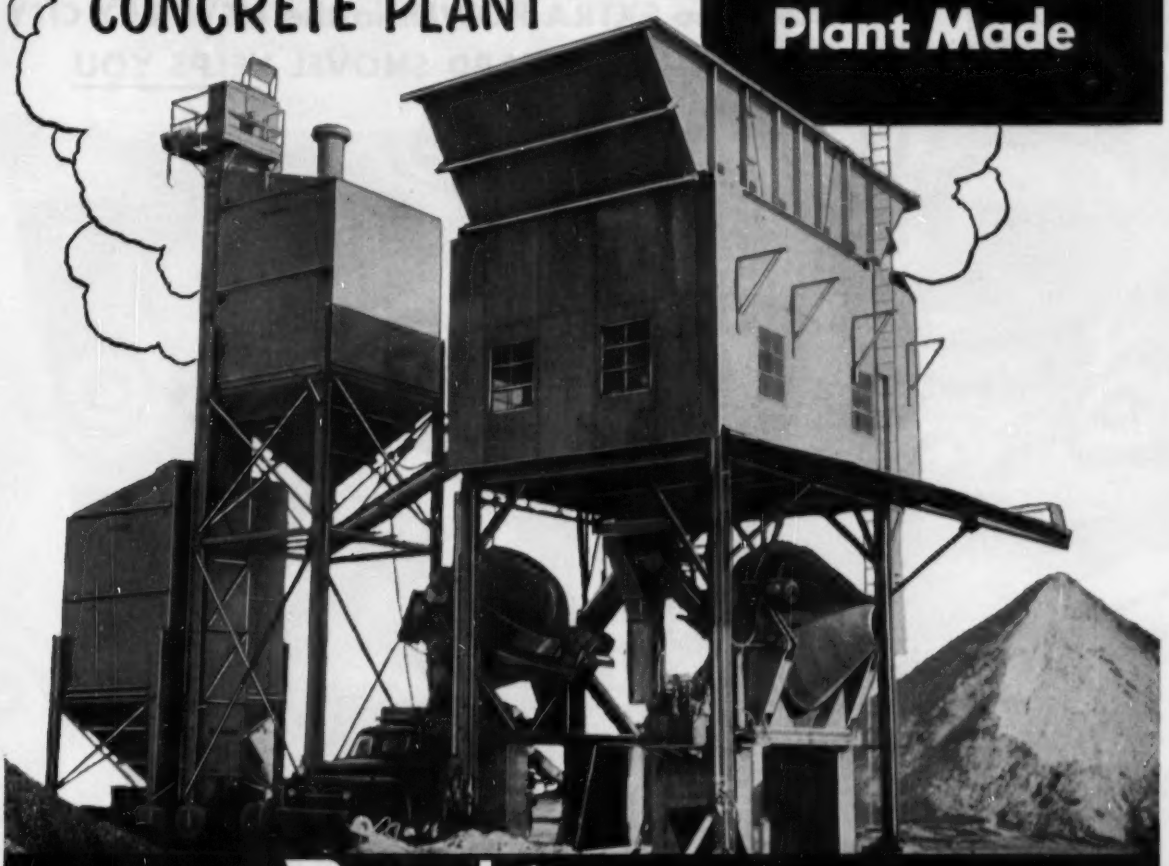
FIRST IN RUBBER

Specify B. F. Goodrich tires when ordering new equipment

AMAZING NEW Burmeister CONCRETE PLANT

Does More Jobs Than Any Plant Made



DESIGNED and BUILT by **Burmeister** for GEO. M. BREWSTER & SON, INC.

Extremely versatile . . . easily portable . . . quality controlled batching automatically . . . that's the performance GEO. M. BREWSTER & SON, INC., Bogota, N. J., gets with this BURMEISTER-built plant! This BURMEISTER engineering masterpiece can do more individual jobs than any other plant on the market today . . . can produce up to 380 cu. yd/hr! Low plant height holds your costs to a minimum . . . only 42' high with two 4-yd. mixers. Plant is shown equipped with 300-ton, 3-aggregate compartment bin. Bin can be made in any size. Bin is *pinned*, not bolted together for quick portability. Engineered with twin 4-yd. BURMEISTER Tilt-Up mixers, this plant is available with 1, 2, 3, 4, 5, 6 cu.-yd. or larger mixers. Big BURMEISTER mixer blades deliver batches in record time. Plant is complete . . . all starters mounted in cabinet . . . all plug-in connections on air cylinders . . . solenoid operated gates for batching. Includes slump meters, moister compensator, over-and-under interlocks, presets, counters, timers and recorders . . . everything in one package! For further details see your Dealer or write L. BURMEISTER COMPANY, 4545 W. Mitchell St., Milwaukee, Wis.

VERSATILE • PORTABLE • QUALITY CONTROL • BIG CAPACITY • AUTOMATIC OPERATION

- **CENTRAL MIX PAVING**
- **CENTRAL MIX STRUCTURES**
- **DRY BATCH PAVING**
- **TRANSIT MIX OPERATIONS**
- **MASS POURS**
- **PROJECT POURS**
- **CAPACITY DESIGNED TO HANDLE UP TO 380 CU. YD./HR.**

Burmeister
COMPLETE PLANTS FROM A SINGLE SOURCE

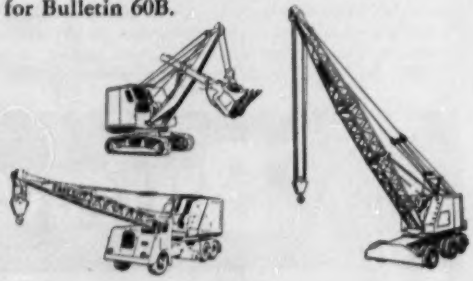
WRITE FOR FULL DETAILS
Write or call for complete information. We will be happy to answer your questions . . . without obligation.

MORE POWER ~~to~~ for YOU!

How the EXTRA POWER in the NEW BAY CITY ONE YARD SHOVEL HELPS YOU

760

The *greater power* and greater strength built into the new heavy-duty BAY CITY one yard-shovel results in smoother, faster operation for you. There's *greater power in the engine:* a big 113 H.P. Diesel assures you of the ability to get in and out of tough places, to dig hard materials with ease, and to maintain a fast, smooth digging cycle. *Power steering* through cone clutches which actuate brakes, gives you superior maneuverability: you can make sharp or gradual turns in either direction while the machine is in full motion . . . you don't have to stop to throw out jaw clutches or set steering brakes. *Power Boom Hoist* on the BAY CITY raises and lowers boom always under power, and the *Power Dipper Trip* makes dumping much easier and much faster. In addition, the BAY CITY has *Power Booster Clutches* which take fatigue out of operating and give you bigger yardage. Put this powerful BAY CITY to work. Get further information today, from your local dealer or write the factory for Bulletin 60B.



BAY CITY SHOVELS INC. • BAY CITY, MICHIGAN

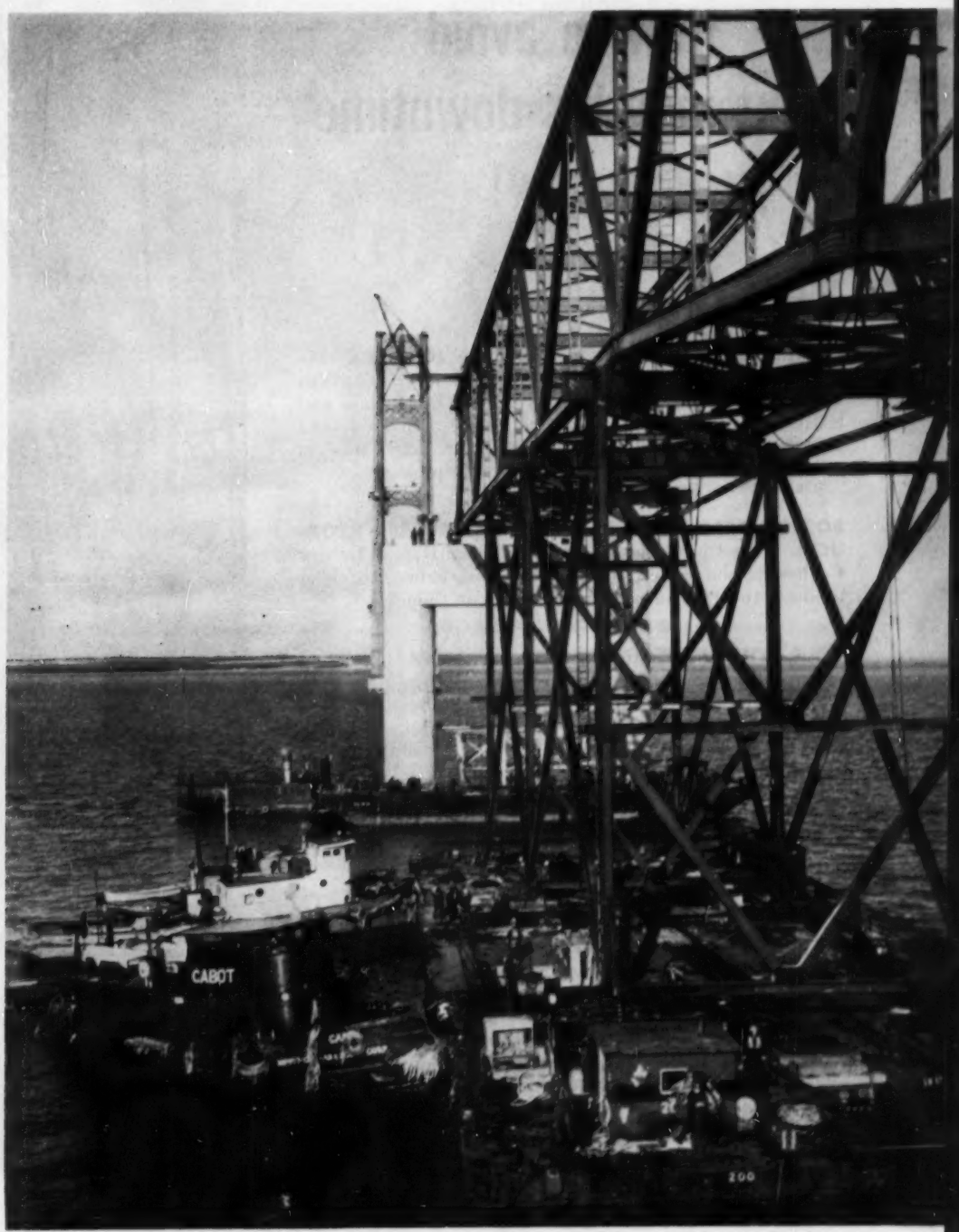
BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

A Milestone

PICTURE OF THE MONTH CONSTRUCTION METHODS AND EQUIPMENT

FIRST SPAN of the five-mile-long Mackinac Straits Bridge goes into place between the anchorage and cable-support piers. This unloaded backstay span is 472 ft long and weighs 750 tons. In the background is one of the two 552-ft main tower piers, both of which are completed. The $80 million bridge will be the world's longest suspension bridge with a center span of 3,800 ft and an over-all length between anchorages of 8,614 ft. American Bridge Division of U.S. Steel Corp is building the superstructure of the bridge under a $44.5 million contract.



READ WHY SO MANY CONTRACTORS SPECIFY BOSTON HOSE AND BELTING

How to avoid next month's downtime ...now!

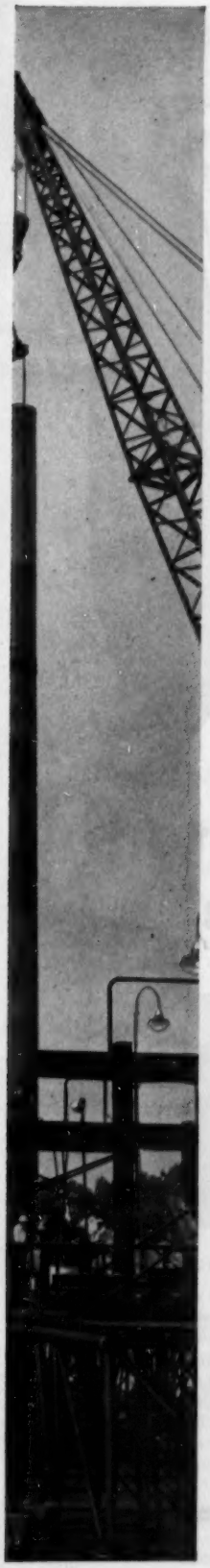
BREAKDOWNS ON ANY CONSTRUCTION JOB ARE COSTLY AND TIME CONSUMING. Contractors simply can't afford to take chances. That's why so many specify Boston hose and belting. They know Boston products have been used—*and proved reliable*—on the biggest, toughest construction jobs . . . jobs like the Lake Pontchartrain Causeway project.

BOSTON SPECIALIZES IN INDUSTRIAL RUBBER PRODUCTS. It's not just a sideline. Boston Woven Hose & Rubber Co. has one aim: to keep right on developing industrial rubber products that will outperform all others on the job.

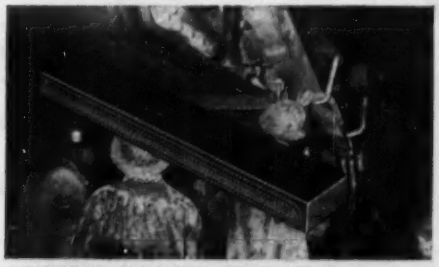
YOUR BOSTON DISTRIBUTOR GIVES YOU FAST SERVICE —immediate delivery when you need it, because he anticipates your needs, prepares to meet them. He's the Boston Man in your area, an expert in industrial rubber products with a thorough knowledge of construction. Why not call him today?

HERE'S PROOF OF BOSTON PERFORMANCE: On the $46 million Lake Pontchartrain Causeway project, Boston Jetting Hose and Pile Driver Steam Hose proved rugged and dependable by driving more than 4600 mammoth piles (each 96 feet long and 67,200 pounds) to help build the 24-mile span.

INDUSTRIAL HOSE • FIRE HOSE • BELTING

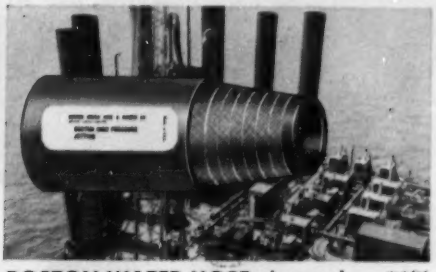


BOSTON CHECKLIST FOR YOUR HOSE AND BELTING REQUIREMENTS

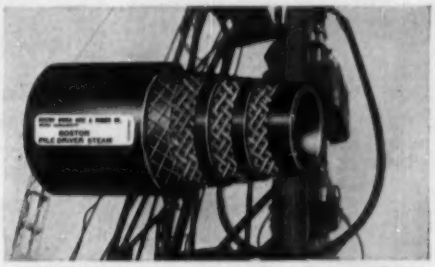


BOSTON MUCKER BELT: Reduce your maintenance costs as much as 34% with Boston Mucker Belt. It simply does not stretch—even after thousands of yards of solid rock. Contractors using Boston Mucker Belt often report replacing worn-out metal hinges seven and eight times *in the same holes!*

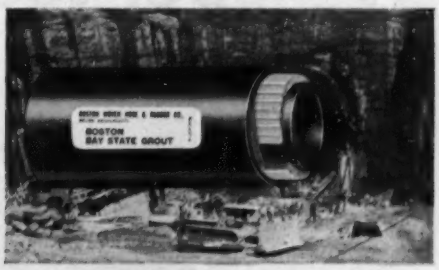
BOSTON AIR HOSE: For pneumatic tools, Boston has a specific hose for every use—from chippers to pile drivers. On heavy duty jobs most contractors use Boston's wrapped fabric hose (shown) or Boston's wire reinforced hose. Both offer long service life, unusual flexibility.



BOSTON WATER HOSE: As much as 72% more durable than other hose on tunnel, dam and bridge construction, Boston water, suction and jetting hose (shown) are tailor-made for every kind of construction job. That's why Boston water hose is dependable even when the going gets rough.



BOSTON STEAM HOSE: Your Boston Man has a complete line of pile driver hose, from 1½" to 2½". Every hose is specially designed to resist rough hammer action and deterioration caused by steam and oil. Boston also offers a wide selection of rugged hose for general steam service.



BOSTON CONCRETE HOSE: Boston's hose for handling cement, concrete and grout is engineered for long use under the toughest conditions. Boston Concrete Placing Hose and Bay State Grout Hose (shown) proved their worth on key projects like Queens Midtown Tunnel and the Delaware Aqueduct.

BOSTON
Specialists

BOSTON WOVEN HOSE & RUBBER CO.
BOX 1071, BOSTON, MASS.

IN INDUSTRIAL RUBBER PRODUCTS

NEW PURCHASING GUIDE
FREE Now—right at your fingertips—all the facts you want to know about the rubber products you use. Saves you time and money, helps you get the right equipment in a hurry. Mail coupon today!

Boston Woven Hose & Rubber Co.
Box 1071, Boston, Mass.
Rush me a free copy of your construction rubber products purchasing guide.

Name_____

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• V-BELTS • PACKING • TAPE

Amsco "WEAR-SHARP" Repointers outlast 2-part dipper teeth

One of the largest contractors on the St. Lawrence Seaway Project proved our point! He switched from two-part dipper teeth to Amsco® "WEAR-SHARP" Repointers, with grooves filled in by hardfacing.

Result: according to the contractor's own report, he's getting much better service life out of the tooth. And, in really rugged service, the teeth retain their cutting edge much longer . . . helping to maintain digging speed and conserve power.

Take a tip from this contractor's experience. Order Amsco "WEAR-SHARP" Repointers from your distributor—for longer service life, for better cutting action.

Hardface with Amsco Hardfacing Alloys and Welding Equipment, too!

"WEAR-SHARP" Repointers*

. . . have grooves on each end and on corner faces, which can be filled in with a tough hardfacing deposit. This equalizes wear and maintains a sharp cutting edge, prevents teeth from rounding or blunting. Available straight (as shown) or with crescent-shaped backs.

*Patented

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

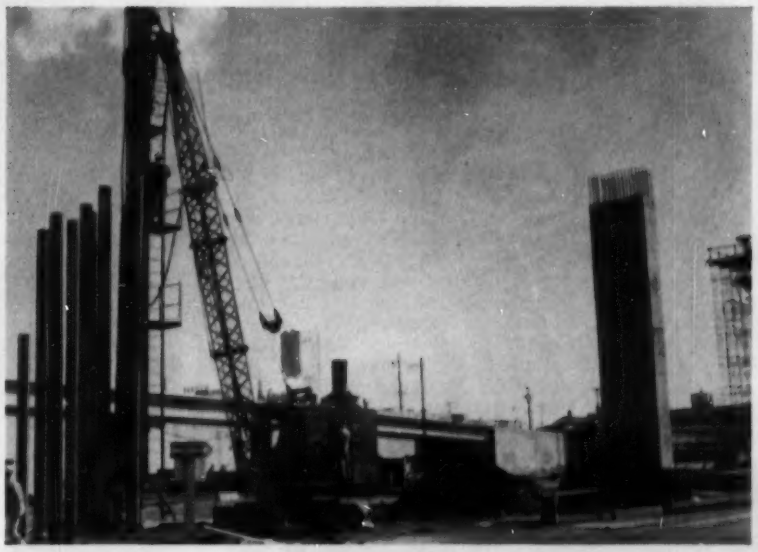
AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS; JOLIETTE, QUEBEC

Construction News in Pictures . . .

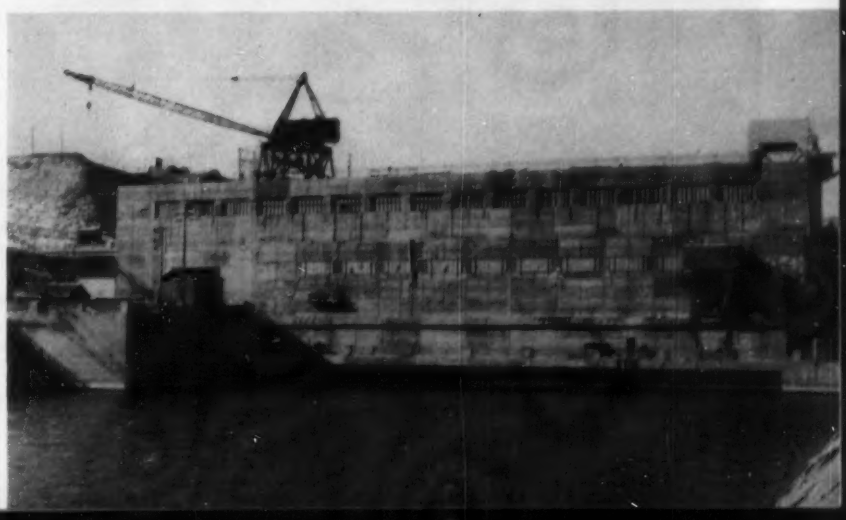


Piling Supports Elevated Freeway

More than 24 miles of steel piling will support this 1½-mile double-deck elevated freeway in Oakland, Calif. The $8-million project will link the San Francisco Bay Bridge with the Eastshore Freeway in Oakland. Macco Corp., Los Angeles, is driving Armco piling fabricated from Kaiser Steel.

Buckeyes Soon Will Train Indoors

Ohio State University's football, baseball, and track teams will use this building for an indoor practice arena. It encloses an area of two acres and measures 200x400 ft. It consists of 18 all-welded rigid frames. The contractor, Builders Structural Steel Co., Cleveland, used Lincoln Electric Co.'s Jetweld electrodes for welding.



Missouri Dam Nears Completion

First power from Gavins Point Dam on the Missouri River near Yankton, S. D., is scheduled to go on the line by late summer of this year. The powerhouse superstructure now is 60% complete. A joint venture of Foley Brothers, Inc., and Donovan Construction Co., both of St. Paul, Minn., holds the $4 million contract for the powerhouse work.

(Continued on next page)

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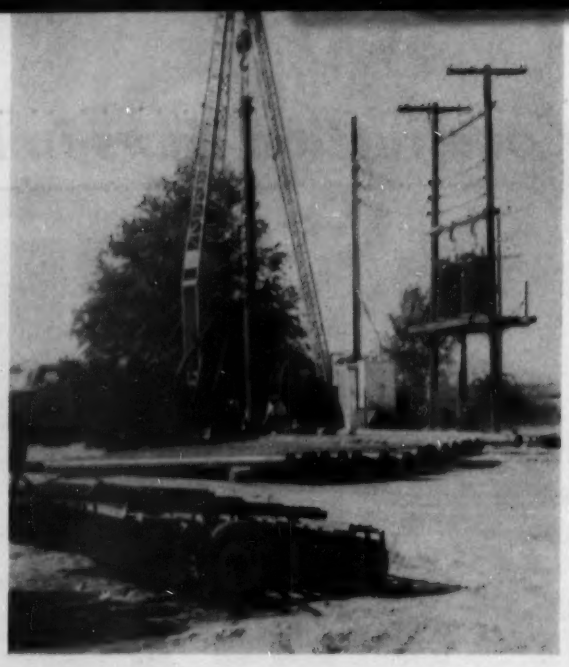
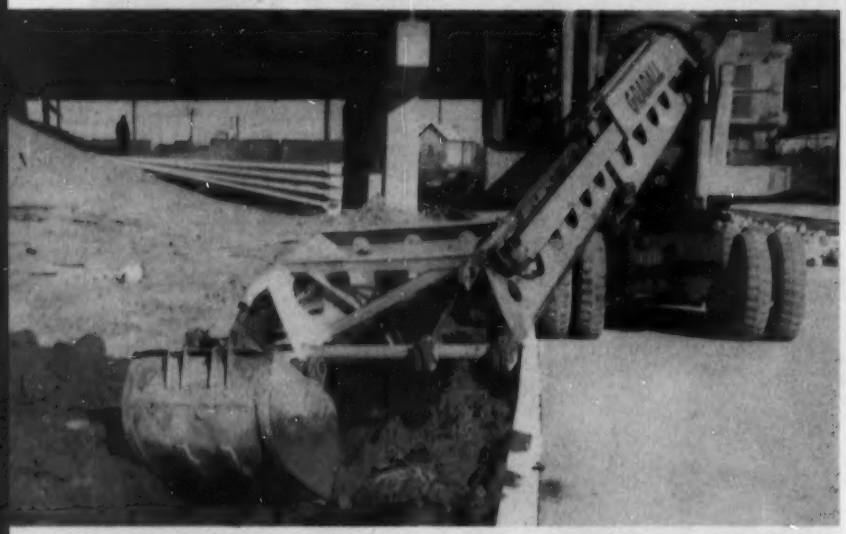


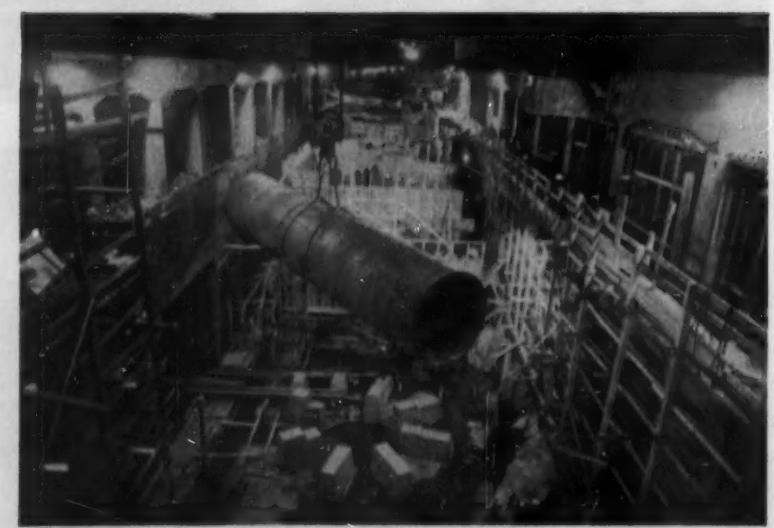
Pump-Setting Unit Lifts 80 Tons

This giant pump-setting rig is capable of lifting up to 80 tons. Its 38-ft boom gives ample clearance for handling joints of column pipe up to 24 ft long. The unit is mounted on a 5-ton GMC truck with all controls located at the rear near the working area so the operator can assist other crew members. The boom is raised or lowered by hydraulic cylinders. Valley Tractor & Equipment Co. designed and built the unit for Byron Jackson Co.



Digging Trench From Turnpike Slab

A Gradall with a 48-in. boom offset and a 36-in. bucket excavates for an electrical conduit from behind the curb of the completed roadway. The project is the New Jersey Turnpike extension, near Bayonne. The boom offset enables Arnold Excavating Rentals, Metuchen, N.J., to work from the pavement without risking damage to the granite curbing by moving back and forth across it.



Crane Places Penstock Lining

A huge 400-ton traveling crane lowers a penstock lining unit into place in the underground powerhouse of Hydro-Quebec's $225 million power project on the Bersimis River on the "north shore" of the power-rich Province of Quebec. As many as 7,000 men have been at work on the remote project that will harness about 1,200,000 hp. Besides the powerhouse, Hydro-Quebec is building a town, two rockfill dams, and a 7.5 mi tunnel at Bersimis.

Shovel-Crane owners!

Working a hard 8 hour day... getting only 6½ hrs. output?

Operator fatigue can cost you important money. Here's how to minimize it!

THINK about the job you're working now. How much *more* money could you make if operators—good as they are—suffered little if any end-of-the-shift-letdown . . . never had to climb out and unlimber "cramping" arm and leg muscles?

Fingertip-operated Link-Belt Speeder power hydraulic controls minimize fatigue

With Speed-o-Matic—the true power hydraulic control system—shovel-crane response is fast, positive, easy. So easy that operators are actually "eager" to push the rig to its limit—all shift long! And what a limit!

You've never seen any machine that can compare with a Link-Belt Speeder for cat-quick agility and long-lived, bulldog stamina. Report after report shows these rigs account for up to 25% or more output per shift.

Seeing is believing

The precision construction, the quality materials and the advanced engineering that have gone into today's Link-Belt Speeder speak for themselves. All we ask you to do is see your distributor and judge for yourself. Be as critical as you like! No shovel-crane on the market today—crawler or rubber-tired, ½ to 3-yd, 8 to 60-ton capacity—can compare. Visit your distributor today or write for literature—LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA.

13,000

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes.

BLAW-KNOX SIMPLIFIED FORMING METHODS ELIMINATE TWO EXPENSIVE STEPS . . .

ON THE UNIVERSITY OF WISCONSIN'S BIG NEW FIELD HOUSE. *For this long, wide structure which has to be free from central supports to accommodate football games or ROTC battalion formations, a relatively unique method of construction was required.*

The Problem:

To build a concrete arch-type building 400 feet long by 200 feet wide, measuring 15 feet high at the sidewalls and 68 feet from the crown of the arch to the dirt floor . . . with no supporting columns or trusses for the thin shell concrete arch and rib beams. The lowest possible construction cost was imperative.

Fitzhugh Scott and Fitzhugh Scott, Jr., Architects

Ammann & Whitney, Consulting Engineers

The Solution: BLAW-KNOX STEEL CENTERING

and Blaw-Knox engineers solved the problem at substantial savings.

First, falsework for the roof arch was designed to be reused 7 times. It was simply moved forward after completion of each pour.

Then, Blaw-Knox engineers considered it more economical to convert the falsework to a tied arch for moving purposes only, thereby eliminating additional sets of steel rail track otherwise required for the central columns. This one feature alone saved costly time and materials. Only two tracks are required instead of the 4 to 6 sets of rails that would normally be necessary to support the 200 tons of centering and move the central columns.

When you have a tough forming contract, discuss your problem with Blaw-Knox engineers in the preliminary planning stage. Blaw-Knox has probably solved similiar problems and saved money for other contractors. There's no substitute for practical assistance when the going gets rough — call in the Blaw-Knox Steel Forms Consultation Service to save money on your next concreting job.

BLAW-KNOX COMPANY
STEEL FORMS DEPARTMENT • BLAW-KNOX EQUIPMENT DIVISION
P.O. BOX 1198 • PITTSBURGH 30, PA. • PHONE STERLING 1-2700

BLAW-KNOX STEEL FORMS CONSULTATION SERVICE

BLAW-KNOX

Your dirtmoving for '56

is likely to call for more yardage, heavier cuts, longer hauls than ever before. Check now on production capacity of the 25-yard BIG "B"

8 Tournapull's weight-distribution puts 56% of loaded scraper weight on drive wheels . . . makes loading easier.

10-gear speed selection

Speeds from 2.4 to 28.4 mph, plus clutch-brake for fast shifting, means more trips per hour. Double-clutching and gear-clash are eliminated Low speed range aids in synchronizing with pusher for fast loading, gives better grade-climbing.

Faster, easier loading

Low push-block has direct-line thrust to blade. Scraper hoist control gives fast pumping in loose materials. Rear deflector-plate heaps loads. Blade angle, weight-distribution, speed loading. Welded box-beam construction takes stresses of fast loading.

Works when other rigs shut down

High percentage of loaded weight on drive-wheels boosts traction. Power-steer through geared kingpin, power-transfer differential, big tires help pull through tough going. Electric controls are weather proof, not affected by rain, dust, cold, heat.

Longer tire life

"B" tires provide ample safety margins. Overinflation is not necessary on "B". Check tire ratings against loaded weight before you buy. Overloaded tires cause overheating and result in excessive wear.

Power where needed

Electrical controls apply power where needed with minimum friction loss. Dashboard push-buttons produce instant action. Maintenance is simple . . . no long cables with multiple reverse bends, to wear, no complicated hydraulic system to leak.

Shorter turns

"B" maneuvers in closer quarters than other big scrapers. This big machine turns around in only 35'. Easy power-steer controls this big rig with no effort. Machine turns fast . . . maneuvers easily, safely, at high speed, with big loads.

Faster, easier servicing

Accessibility is tops in the "B". All components are easy to get at and service. You don't need to take whole machine apart to remove working parts. Fewer fittings and check points reduce lubrication time.

Safe, easy operation

Fingertip electric controls let operator work faster, with less fatigue. Good visibility, ease of operation, low center of gravity, big disc-type brakes make Tournapull exceptionally safe to operate. More than 4 times braking surface per-ton-of-weight than others in its size class. Good "B" operators are easy to get and keep.

Interchangeable equipment

Same "B" prime-mover pulls interchangeable 35-ton rear-dump. You get double value by keeping your 2-wheel tractor hauling either shovel rock or scraper dirt. Bodies use same wheels, tires, brakes, and electric controls. Change takes only few hours.

Investigate the BIG "B" now and place orders early if you want spring delivery! *The time to buy is now.*

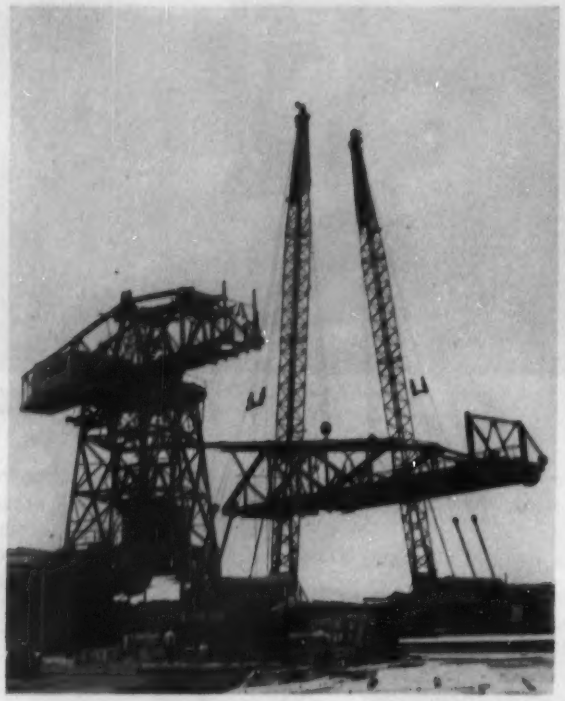
Wide and high apron-opening, plus positive-ejection tailgate, gets big 25-yard loads out fast.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-958-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Construction 'Round the World . . .

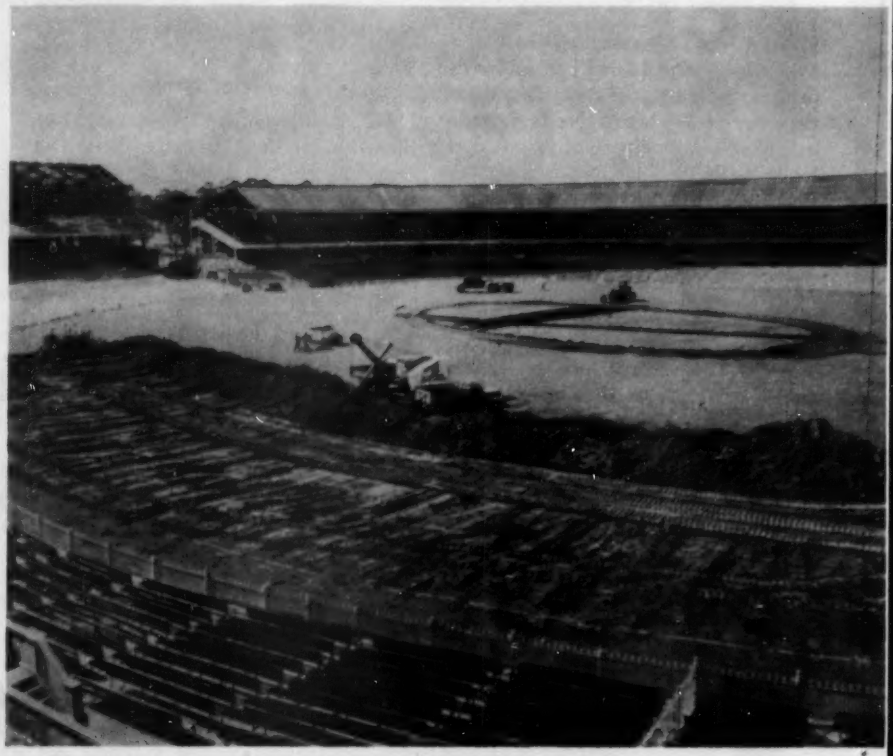


In Israel

Draining of Huleh swamp, a $5 million reclamation program, will be completed during 1956. This 16-in. dredge is one of two dredges brought from the U.S. in sections by Construction Aggregates Corp., Chicago, to cut 20 mi. of drainage channels.

In New Zealand

Two Manitowoc cranes erect a 30-ton hammerhead crane for the new plant of Tasman Paper and Pulp Co., Kawerau, N.Z. Plant is the largest of its kind in the Southern Hemisphere. Joint venture contractor is Fletcher-Merritt-Raymond.



In Australia

Contractors are giving the Melbourne Cricket Ground a major face-lifting to prepare it for its role as the main stadium for the 1956 Olympic Games. Roche Bros., Ltd., is building a 400-meter cinder track. Other work includes rebuilding the stadium to raise its capacity from 85,000 to 120,000.

Trimming back banks, 2½-yard shovel loads Rear-Dumps with 9 to 10 tons of granite and dirt, in an average of three passes. Loading time in this rocky going: about 1 minute 50 seconds.

"*Can't be beat* for work in cramped quarters," says supt. on mountain road job

To relocate four miles of dangerous, winding, one-way highway through the Sierra Nevada mountains in western California, Ball & Simpson, Berkeley, moved about 800,000 cubic yards of granite.

This job required sturdy haul equipment that would move rock fast during the summer months before snow closed roads for the winter. To handle this work, company drove in three, sure-footed, 28 mph D Tournapull Rear-Dumps.

Work faster on mountain roads

Tournapulls' 90° turning ability, provided by instant-acting, easy-to-operate power steer, enabled these Rear-Dumps to spot for load and dump faster and more safely than could a conventional dump-truck.

Giant multi-disc four-wheel air brakes, with more brake surface on one wheel than most haulers have on all four, gave operators confidence to use Tournapulls' top speeds on steep, narrow mountain grades.

Says Operator Gordon D. Wood, "These Tournapull Rear-Dumps have good brakes that you can depend on to stop *right now*. Machines are easy to handle, too. They certainly get around good in narrow spots."

Because of Tournapull's advantages, each Rear-Dump was able to average 1000′ cycles in 4 minutes 10 seconds.

Superintendent E. E. Frost, said that, in the best production he could recall, each of the three Rear-Dumps hauled 200 loads 300′ down a steep grade, during one 10-hour day.

He describes this relocation job on the Sonora Pass Road as one of the toughest examples of rock road work he had ever seen. "Tournapull Rear-Dumps can't be beat. They are a wonderful piece of equipment for this type of work. Tournapulls run in and get under a shovel so much easier than a truck!"

No major repairs in 3 years

During three seasons in the Sierra Nevada mountains, machines have experienced very little downtime, needed no major repairs. Although the three "D's" have been used more than 2500 hours each, original tires are still in good condition.

Why not check on what this power, speed, and production can do on your hauling jobs? Ask your LeTourneau-Westinghouse Distributor for owner-verified production figures on the size Rear-Dump best suited to your job... the 11-ton "D"... the 22-ton "C"... or the big 35-ton "B".

Tournapull dumps in ½ minute, including time maneuvering to edge of bank. "They're fast dumpers" says Operator Gordon D. Wood. Working a 58-hour week, Tournapulls hauled 75% of the material in this road relocation. Balance was moved by 2 crawler-scraper combinations and 2 crawler-dozers.

Rear-Dumps hauled granite-fill for relocation of 4 miles of mountain highway. The new, modern, two-way road, built under the direction of the Bureau of Public Roads, eliminates a narrow winding section of the Sonora Pass Road (State Route 108), between Dardanelle and Strawberry.

Tournapull—Trademark Reg. U.S. Pat. Off. DR-914-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Champs with a new power punch!

These Task-Force heavyweights pack the biggest power punch in Chevrolet truck history with a completely new Loadmaster V8 and revolutionary new Powermatic Drive!

Modern short-stroke V8's are standard in *all* new Task-Force L.C.F.'s and heavyweight haulers — with the big new 322-cu.-in. Loadmaster in top-tonnage L.C.F.'s and in other models rated up to 32,000 lbs. G.V.W. and 50,000 lbs. G.C.W.! It's Chevrolet's Taskmaster V8 in other heavy-duty models!

Get new Powermatic Drive, a 6-speed automatic specially built for heavy-duty jobs, for the most flexible and efficient application of engine power! Optional at extra cost in all conventional heavy- and most medium-duty trucks. See your Chevrolet dealer for details on the right model for your job! ... Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET **NEW CHEVROLET TASK·FORCE TRUCKS**

Anything less is an old-fashioned truck!

Takes shortest route to job . . . via highway or cross country . . . cuts hours from job-to-job moves.

Drives through city without interference to traffic, turns sharp corners, maneuvers easily in tight quarters.

Safe in traffic with big brakes, finger-tip control. Tires do no damage to blacktop, curbs, sidewalks.

Saves hundreds of dollars

by driving job-to-job under own power

A major advantage of rubber-tired Tournatractor is the 19 mph on-the-job and between-job mobility it gives you. With this machine, you drive anywhere under your own power. Big low-pressure tires do no damage to pavement, curbs, sidewalks or railroad tracks. You don't need planking to cross blacktop. You save the time, bother, and expense of locating a trailer, moving in extra men and extra transport equipment, loading and unloading, etc., etc.

When it's time to move from one job to the next, your operator starts as soon as the last yard is in place, drives down the highway, right through regular traffic, at speeds up to 19 mph. 50 miles is only 3 hours away . . . and you go right to work when you get there.

Then, if there's a call for tractor services at the other end of your job, Tournatractor hurries there, traveling up to 1,670 feet per minute. Often it can go, complete the work, and be back at its starting point, before a crawler gets to the site.

Figure out for yourself what this means in dollars:

1. Greater speed on the job that completes each assignment faster.
2. Roadability that cuts moving costs and reduces the non-pay hours of moving time.
3. Fast one-man moves that make it easy to keep Tournatractor profitably busy at all times, that let you fill in with small jobs between big ones with no stand-by losses.
4. Long range drive-yourself mobility and versatility that lets you move with the seasons, find year-round earnings when you need them.

Write or call us for more information on this versatile, high-speed tractor-on-rubber. Ask for a demonstration on your job. See for yourself what Tournatractor can do to speed your dozing, towing and pushing jobs.

Crosses tracks without damaging ties, tripping signals, tearing rails loose, or injuring tires.

Can haul own fuel wagon, other supplies. Self-sustaining on job, eliminates need for service trucks.

Tournatractor—Trademark T-735-G-b

FREE . . . A new 28-page book, showing all the ways Tournatractor will increase your production while lowering your costs. To get your copy, simply fill out coupon. Mail today to LeTourneau-Westinghouse Company, Peoria, Illinois. There is no obligation.

Send to: LeTOURNEAU-WESTINGHOUSE COMPANY, Peoria, Ill.

Your name _____

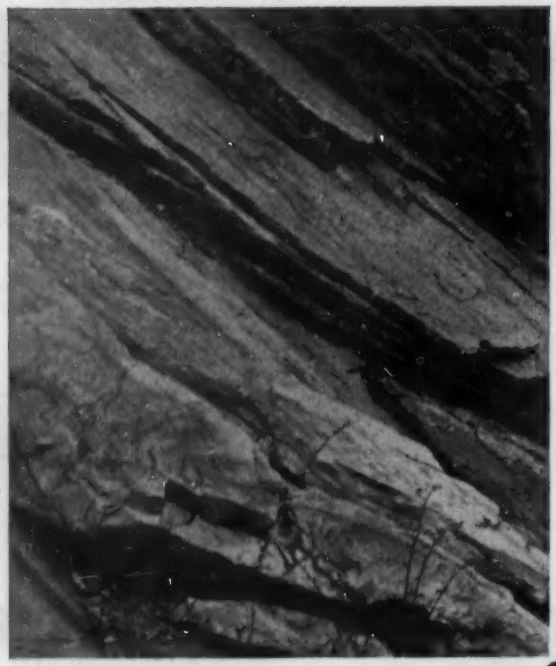
Title _____

Company _____

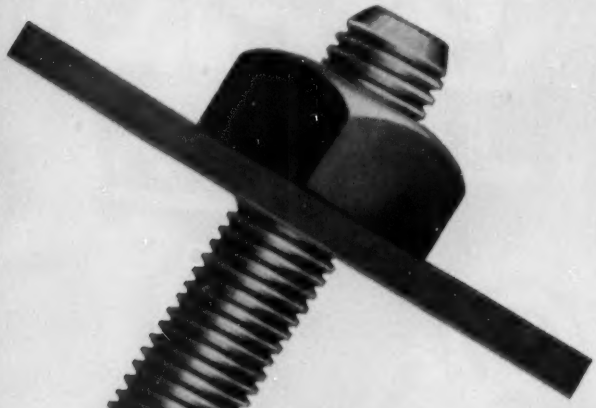
Address _____

Street, City, State

T-735-G-b



To reduce the danger from slides, rock formations like this can be bolted economically with Bethlehem Rock Anchor Bolts.



Worried About Rock Slides?

Many a rock slide can be prevented by using Bethlehem Rock Anchor Bolts at potential danger points.

Bethlehem Rock Anchor Bolts minimize the danger of rock slides because they reinforce the rock formation, preventing boulders or layers of rock from sliding or falling. They are ideal to use in cuts with high banks, or in steep hillsides, and are highly effective where the formations which they anchor in turn support overlying strata and earth.

Bethlehem Rock Anchor Bolts are made in lengths of from 2 ft to 10 ft. One end of the bolt has 5 in. of 1-in. rolled threads. The opposite end contains a 6-in. forged slot.

In installing the bolt, a 1¼-in. diam hole is drilled about 3 in. less than the length of the bolt. A wedge is started in the slot, then the bolt is inserted in the hole, after which it is driven to refusal. A dolly protects threads from damage. Driving action forces wedge deep into slot, spreading bolt-end so that it locks against sides of hole.

Bethlehem Rock Anchor Bolts come with an American Standard square nut. Depending upon the type of strata, they can be used in combination with rock-anchor plates or ties, or angle washers.

We have an interesting two-color booklet on rock anchor bolts. Write to the nearest Bethlehem office for your copy.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM ROCK ANCHOR BOLTS

On cleanup work, "D's" loaded rock and excess material from road shoulders and disposed of them in waste areas.

How Union Building & Construction cut cleanup time and cost on Indiana Turnpike

Handyman "D's" with 28 mph speed for cleanup work, proved big time-savers for the Union Building & Construction Co., of Passaic, N. J., on the Indiana Turnpike.

Handle cleanup and sub-grading

Typical cleanup work, on a 13.1-mile section of the turnpike, had 3 D Tournapulls self-loading and hauling excess materials from shoulders to nearby waste areas. The "D's" speed and mobility paid off, because cleanup assignments were scattered over many sections of the turnpike.

Sometimes, these handy scrapers hauled rock and excess materials a few hundred feet, sometimes thousands of feet, depending upon how far the cleanup area was located from the fills. After completing cleanup work, the three "D's" hauled gravel subbase and spread it along shoulders and backslopes prior to landscaping. Two other D Tournapulls were profitably used spreading topsoil along shoulders and backslopes. Occasionally, when this work was caught up, they were used for production dirtmoving on cut-and-fill.

When photos were taken on the job, nearly 400,000 sq. yds. of topsoil 2" deep had been placed. This total was accomplished, using 2 to 5 "D's" as available, and when needed.

"Hard to beat"

According to this contractor, "D's" versatility played an important part on this 3,500,000-yard job. They had also done outstanding work on other assignments, too. For example, recently 2 "D's" placed over 1,000,000 sq. yds. of topsoil 4" deep, some of it down 4 to 1 slopes, on the Garden State Parkway in New Jersey.

Foreman Wayne Shumaker said, "These Tournapulls do finer work and get around quicker than other small rigs." Operator Ernest J. Janssen added, "'D's' are easy to operate, especially for finishing. In close work, they're hard to beat!"

For speed and mobility on cleanup, and other odd-job assignments, as well as in production hauling, check D Tournapulls today. Call or write your LeTourneau-Westinghouse Distributor for all the facts.

Filling in gravel subbase, "D's" maintained even flow of material along shoulders by spreading on the run.

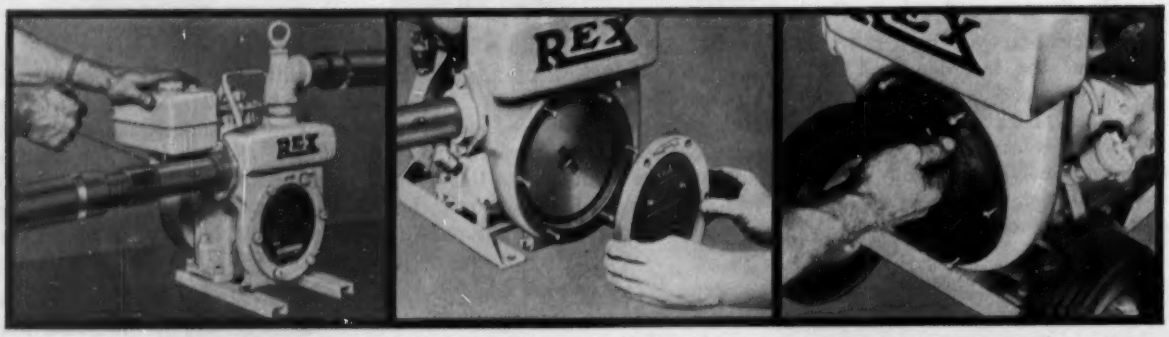
Tournapull—Trademark Reg. U.S. Pat. Off. DP-935-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

REX®

The Pump that Never Lets You Down



Easier to Start—A Rex Self-Priming Pump starts working easier, with less effort—in less time. It requires less initial prime water. Suction connection is easier, too. No pipe wrench needed. Just remove bolts. No hose or nipple damage.

Easier to Clean—Simple removal of the front cover plate puts all parts within easy reach for quick, thorough cleaning. You do not remove suction and discharge lines to "get at" a Rex. Then, simply replace the cover and you're pumping—fast.

Easier to Maintain—Simple cover removal puts parts within reach for easy maintenance. The exclusive Rex Adjustable Peeler permits compensation for wear with a twist of the wrist. You get *new* pump efficiency for the life of the pump.

For information, write CHAIN Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wisconsin

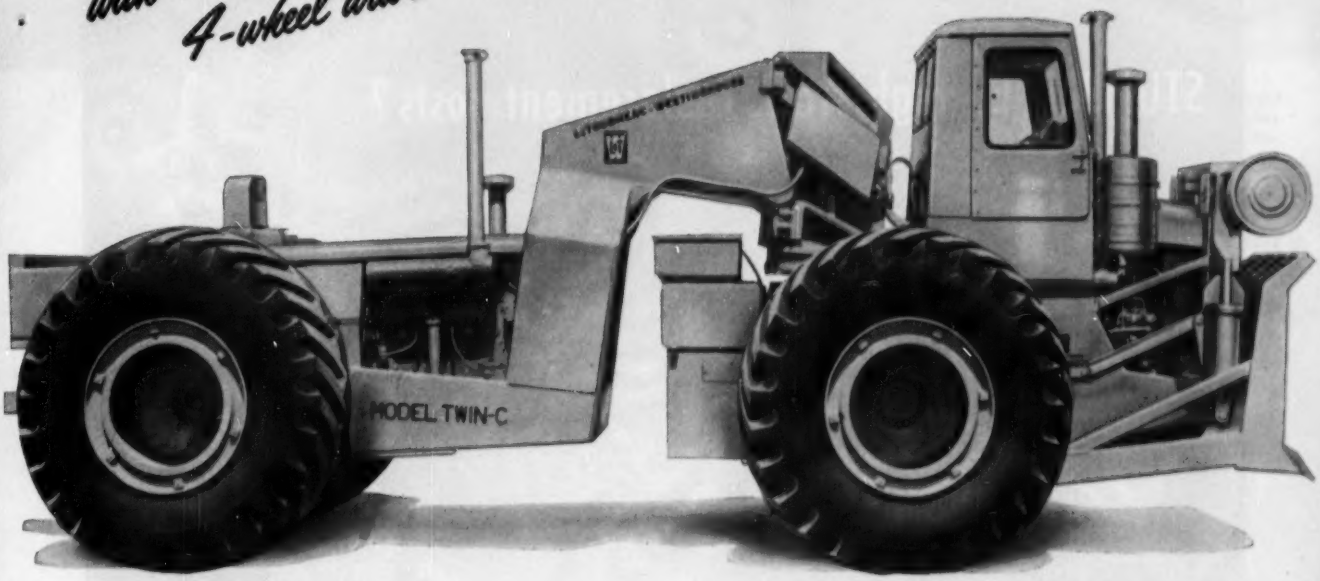
CONSTRUCTION REX MACHINERY

CHAIN BELT COMPANY

Now... world's MOST POWERFUL and FASTEST push tractor...

with 416 HP and 4-wheel drive

The Twin-C Pusher



...to give you bigger loads in shorter loading time

One operator and this powerful "Twin-C" pushes your biggest production scrapers for capacity yardage. On many jobs it will do this in less time than it takes 2 crawler-pushers with 2 operators. Rubber-tired speed, and articulated steer, give quick maneuverability for direct-line push, save seconds in picking up next load.

Synchronized power matches speeds of earthmovers — Twin-C speeds match loading speeds of modern rubber-tired earthmovers, take advantage of combined power of loader and pusher to get big pay loads *fast*. Torque converter, teamed with constant-mesh transmission in both front and rear engines, reduce "lug downs" and gear changes necessary in many pushers.

More usable power with rubber pushing rubber — You get greater usable horsepower and coordinated pushing force when you push rubber with rubber. You get full floating traction... tire treads follow tire treads... no loss of power to flatten out rounded tire-tracks into flat track-tracks. And Twin-C's 80,000 lbs. weight rides on four big 29.5 x 29 tires with 22-ply rating; each 2'5" wide for firm ground-gripping traction on any type of surface.

Additional Twin-C advantages:

- Forward speeds to 20 mph and fast reverse, plus "articulated" steer, enable Twin C to position faster behind scrapers.
- Big 49½ x 88" heavy, concave push-bowl is positioned by an electric motor to take full advantage of contact area provided by scraper push-block.
- Push-button electric controls with instant response, the same type controls used on LeTourneau-Westinghouse scrapers for 8 years, give you positive power-steer and accurate push-plate-positioning.
- Power-transfer differentials on both engines match pull to traction, automatically apply power to wheels on firmest footing. Keep big pay-loads rolling in sand, mud, and loose materials.

If your fleet includes production scrapers, you will want more information on the Twin-C Pusher. Ask your LeTourneau-Westinghouse Distributor for full details.

65,900 lbs. Drawbar Pull! Powerful 416 hp Twin-C Pusher push-loads scraper fast. In recent Dynamometer tests, Twin-C, operating in sandy clay footing, registered drawbar pull of 65,900 lbs. in low-speed range.

Twin-C—Trademark TW-1039-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

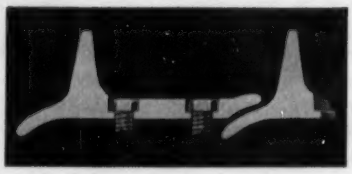
A Subsidiary of Westinghouse Air Brake Company

Switch to extra-tough AMSCO® MANGANESE STEEL TRACTOR SHOES

When the going is extra tough, as in rocky areas or abrasive mineral soils . . . tractor shoe replacement can become a major cost item. Both repair time and down time eat up profits.

Switch to "the toughest steel known" . . . Amsco Manganese Steel . . . for tracks and grouser bars. Check their much longer service life against the moderate extra cost. Add to this the greater efficiency and pulling power of your tractor, over a longer period of time. The answer: *important operating economies.*

Amsco Manganese Steel gives excellent resistance to abrasion accompanied by impact . . . actually *work-hardens* in use. Write for full information on long-wearing Amsco Manganese Steel Tractor Shoes—the economical answer to high track-replacement costs.



COUNTER-SUNK BOLT HOLES

Amsco Track Shoes have holes counter-sunk for less wear on bolts. Saves cost of replacing bolts when changing shoes.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS, JOLIETTE, QUEBEC

"Saves us many hours"

says Wisconsin Contractor

"The Adams power-shift moldboard gives grader long reach—*fast*," said Phil Frank, partner in Frank Brothers, Milton, Wis. "Grader does not have to be maneuvered out of its line of travel for extra blade reach when sloping banks, grading shoulders, etc. This saves us many hours. It's the best grader I have seen for cutting backslopes."

Frank Brothers used their Adams "660" along with 4 C Tournapulls on a project relocating 1½ miles of Wis. Hwy. 58, six miles south of Mauston. Part of this job included building a ditch to change the course of a stream which intersected the right-of-way. The grader patrolled the haul roads, finished backslopes, scarified sandstone rock for scrapers, leveled fill, handled finish-grading.

One-piece frame resists shocks

The heavy, box-construction, one-piece, streamlined frame of this husky grader is built to resist load shocks and stresses. Weight is distributed to make use of full power in all gears. Big, powerful engine starts quickly in any temperature; has lugging ability to move heavy loads. Constant-mesh transmission gives smooth speed through all gears.

8 Forward speeds . . . to 26 mph

There's a speed to fit the work load of every grading operation. This means more applied power, greater accuracy. You get work done fast, save time moving job-to-job. Three additional "creeper speeds" (.23 to 1.82 mph) are optional. These "slow-motion" speeds make it easy to rip hard-packed roads and old asphalt, root out unseen roots and stones without severe shocks, give you accurate finishing in tight places.

4 Reverse speeds . . . to 13 mph

Wide range of reverse speeds saves time on shuttle-grading and mixing, backing to buck snow drifts, etc. *No other grader offers this wide range of operating speeds.*

Double-action hydraulic brakes

Service brake applies braking action to transmission as well as wheels; surer, safer stops are possible, with less pedal effort.

Rubber-mounted engine

Vibration is not transmitted through floor to machine and operator. Means less maintenance, better operator efficiency all day long.

See Adams before you buy

Select your next motor grader on the basis of *performance*. Ask your LeTourneau-Westinghouse Distributor for performance facts and specifications. Learn why Adams graders do *more* work, in *less* time, at *lower* cost. You be the judge!

Keeping haul road open, "660" grader leveled ruts at high speed, made it easy for scrapers to maintain high production. Job was one of many Adams grader handled on this highway job.

High-angle blading of ditches found Adams "660" holding steadily to contour. Blade held precisely to cut with equal pressure at all points.

A size ADAMS for every need

Model 660—150 hp diesel engine, 27,730 lbs.
Model 550—123 hp diesel engine, 23,500 lbs.
Model 440—104 hp diesel engine, 21,500 lbs.
Model 330— 80 hp diesel engine, 20,500 lbs.
Model 220— 60 hp diesel engine, 14,865 lbs.

TraveLoader—A high-speed, heavy-duty, self-propelled, belt-type loader for picking up materials and loading into trucks from windrows or stockpiles. Your choice of 55 hp gasoline or 60 hp diesel engine, 16,800 lbs.

AG-8-G-bw

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Clark Equipment offers a practical

this Vital Area:

TRANSMITTING

These Men Are Your "Contacts" With CLARK —— concerning design problems and service

HARRY B. STONE

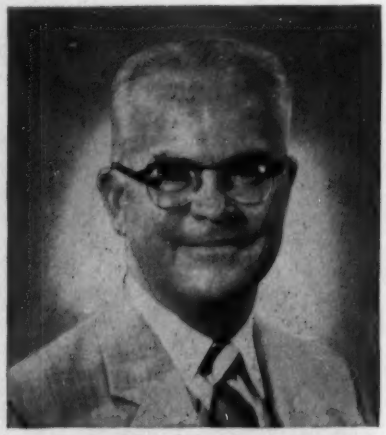
Clark Equipment Company
Buchanan, Mich.

Mr. Stone, Supervisor of Distributor Sales for Clark Equipment, is an engineer and sales executive of 19 years experience with leading automotive equipment builders.

RENKE BRUNKEN

Brunken Corp.,
710 Knollwood Avenue, Ashtabula, O.

Renke Brunken handles Clark automotive line from Maine through the Carolinas, Penna., eastern Ohio. Eminent engineer, Torcon founder, Mr. Brunken is a power-transmission authority.



NICHOLAS A. D'ARCY, JR.

Nicholas A. D'Arcy, Jr.,
7535 Marbrisa St., P. O. Box 447,
Huntington Park, Calif.

Clark automotive products sales in California, Arizona and Nevada are handled by Mr. D'Arcy, long experienced in heavy equipment, a mechanical engineer.

WADE A. ESKRIDGE

Wade A. Eskridge,
403 S. Peoria St., Tulsa, Okla.

Southwest District Supervisor and outstanding automotive engineer, Mr. Eskridge heads the Clark field office in Tulsa, a complete facility for technical aid, prompt service and parts inventories.

HARLAN C. McKAY

Harlan C. McKay Company
2950 S. W. Vista Drive, Portland 1, Ore.

The McKay company sells and services the Clark automotive line in the Pacific Northwest, Br. Columbia, Alberta and Alaska. Mr. McKay knows power needs of logging, contracting, transportation.

MAX RICHLER

Richler Automotive Corporation,
836 Wellington Street, Montreal 3, Quebec

Max Richler and his brothers, old-established equipment house, sell Clark's automotive line in Ontario, Quebec; with service facilities and parts at Montreal and Toronto.

comprehensive service covering

ENGINE TORQUE

H. A. DAVIS

H. A. Davis Power Equip. Co.,
2142 Irving Boulevard, Dallas, Texas

In Texas, Clark's automotive line is handled by H. A. Davis Power Equipment Co., leading distributor, with complete sales, service and parts inventories.

JOHN M. SHANK

John M. Shank Co.,
5 Birchwood Ave.,
White Bear Lake 10, Minn.

Mr. Shank, power equipment veteran, distributes Clark automotive products in Minn., Wis., N. and S. Dakota, Iowa, Nebr., Upper Mich.; and maintains complete service facilities.

For more than half a century, Clark Equipment has focused its engineering attention on a Vital Area of machinery performance —the Transmission of Engine Torque.

From that planned specialization came Clark axles, Clark transmissions and the Clark one-piece forged axle housing; and finally, as a natural evolution, the Clark torque converter.

Better Power-Trains=Better Machines

When the first Clark fork-lift truck was born in 1927, Clark applied its know-how and torque transmission experience to developing power-train systems for this new type of vehicle.

Again, in recent years, Clark developed a revolutionary power-train for its own newly developed tractor shovel; and almost overnight became a major factor in the construction machinery industry.

What could be more natural than that other manufacturers of agricultural and industrial machinery, recognizing Clark's unique asset of power transmission experience and expertness, should ask for Clark collaboration in developing driving units of functional design for their own products?—ask for it, and get it.

So today it can be said of many modern machines, Clark-built and others: "From engine flywheel to point of power use—torque transmission system designed and manufactured by Clark Equipment."

NOW: A Service to Users

Today that invincibly logical Clark development has an equally logical sequel: a complete Power Transmission Service to users of diesel or gasoline horsepower—from flywheel to point of torque application.

That service is implemented as follows:

- **District Sales Engineers—A nation-wide organization of men fully qualified to help solve technical problems**
- **Independent Equipment Dealers—Long established businesses of high reputation and well staffed; to distribute Clark products direct to users in certain key industries**
- **Adequate Service Facilities—With service parts stocks maintained at strategic points, to provide prompt, accurate satisfaction for users' needs**

As a user of diesel or gasoline horsepower, always on the lookout to get the best possible performance at lowest possible costs, you'll find it good business to establish a working relationship with Clark, through its nearest representative.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Automotive Division

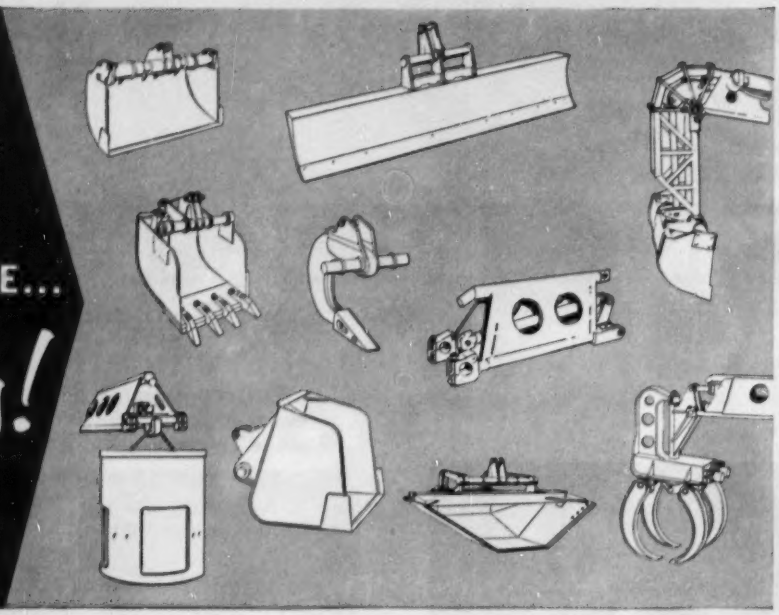
Transmissions, Torque Converters:
Jackson 6, Michigan

Axles: Buchanan 6, Michigan

CHANGE
AN ATTACHMENT...

HAVE A
DIFFERENT MACHINE...
ALL IN

4½ minutes!



you can do it only with a Gradall®!

20 QUICKLY INTERCHANGEABLE ATTACHMENTS TO MEET THE REQUIREMENTS OF ANY JOB

YES, with a single investment in a Gradall... plus your selection of any of 20 Gradall attachments... you have, in effect, a whole fleet of machines! By simply changing attachments...in less than 4½ minutes...your Gradall is ready for the next job. And there is ample room on a Gradall to carry all the attachments you'll need.

Whether you're a big contractor or small... or a municipal, utility, or industrial official... it will pay you to see a Gradall in action before you buy any construction or maintenance machinery. Gradall has the power for the tough jobs, the telescoping reach to work in tight quarters, and the accuracy to hold ¼" grades and eliminate costly hand labor.

® Reg. U. S. Pat. Off.

MIDDLE STATES ASPHALT CORP., *Ashland, Ohio, demonstrates Gradall's smooth arm-action as it holds a close grade on this angled ditch, and works in close around culvert. With a quick change of attachments, it's ready in a hurry for any other job.*

ALSO AVAILABLE

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YOU CAN DO IT BETTER, FASTER, FOR LESS WITH A GRADALL

April, 1956

VOLUME 38 • NUMBER 4

HENRY T. PEREZ, Editor

CONSTRUCTION METHODS AND EQUIPMENT

Whose Welfare?

REPORTS OF SKULDUGGERY and mismanagement of union welfare funds are much in the news. It would seem that more than just a few of them apparently are run for the benefit of union officials and friends, rather than for the benefit of the employees they are supposed to protect.

One recent investigation of union welfare funds was conducted by the New York State Insurance Department. In checking more than 100 funds, it found that some 15% were "badly run," 30% were open to "serious criticism," and only 55% were "really good." A fine record!

A department spokesman, however, emphasized that the majority of funds are *honestly* run. But, if 45% of the funds investigated are subject to serious criticism, it would appear that prudent business practice has not been followed in their administration.

Indications are that some welfare fund abuses go far beyond simple mismanagement. According to Martin S. House, special counsel to the New York State Insurance Department, here are some of the things his investigation disclosed:

An agent handling a group of funds admitted embezzling more than $150,000 in premiums to pay those controlling fund business. One agency collected a fee of better than $600,000 on $5,000,000 in premiums, charged nearly one-third of it off as promotion and entertainment, and refused to answer questions about these expenses.

One fund had an overhead of 55%, whereas less than 10% is the generally accepted proper figure for such expense. Some fund officials received as much as $25,000 a year for their services, in addition to regular union salaries. And there were strong indications of agents splitting fees with union officials.

Misuse of welfare funds also has been turned up by this and other investigations. Their monies have been used to make unrepaid loans or gifts to unions or union officials. They have been used to finance strikes.

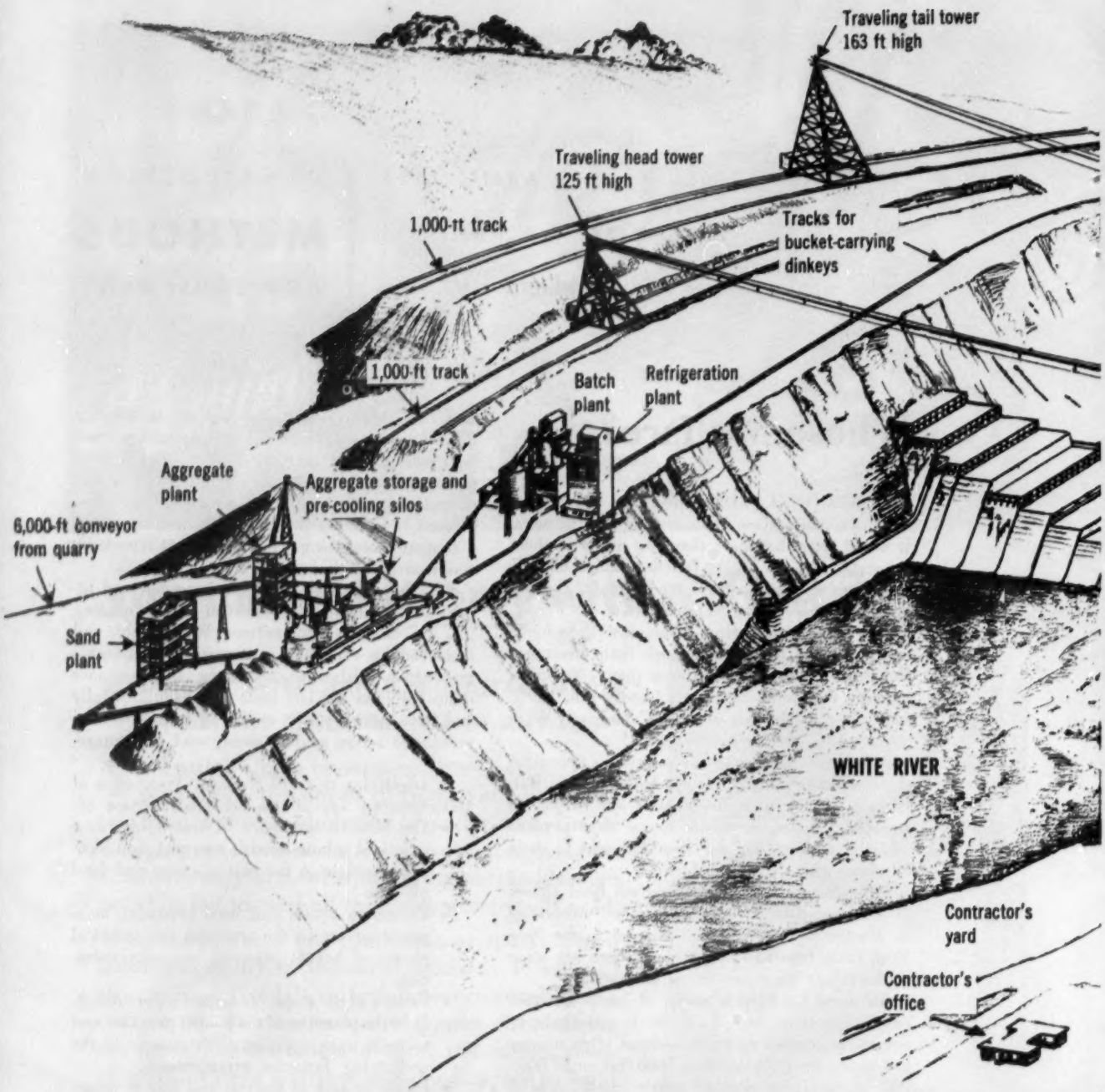
Among other disclosures are evidences of discrimination and coercion. In one instance, union and fund officials were covered by more than $10,000 of life insurance, but ordinary union members were insured for only $3,000. And jobs of two employer representatives on one fund's board of trustees were struck because the representatives refused to sanction placement of insurance with a company that was not low bidder but reportedly was favored by the union.

Who is responsible for the present state of affairs in welfare fund administration? According to a U.S. Senate subcommittee: "With notable and commendable exceptions, the parties at interest—management, labor organizations, the insurance industry—have not met their responsibilities fully and have been equally remiss in failing to take preventive action against abuses and mismanagement."

In amplifying this, the National Association of Manufacturers say abuses occurred because of:

- The relative ignorance of sound insurance practices, administrative concepts, and business controls on the part of union and fund officials.
- Failure to obtain and heed impartial, competent advice on the actuarial and technical phases of benefit planning and administration.
- Failure of the employer to participate directly in the planning of the benefit program and to insist upon appropriate safeguards in the underlying financial arrangements.
- Employer lack of interest and fear to assert prerogatives in the administration of the program, evidenced by failure to assume actively the duties of trusteeship or to abdicate responsibilities entirely.
- Failure of federal and state agencies to enforce existing law.
- Failure of union officials to regard the rights of the people for whom the programs were established.
- Apathy on the part of union members, possibly induced by the fact that many negotiated programs are financed entirely by employers.

That's quite an indictment. These failings must be remedied if welfare funds are to protect the worker.



BATCH PLANT perched on edge of high bluff charges concrete buckets which are hauled on railroad dinkeys to cableway pickup points.

Table Rock Dam — Proving Ground

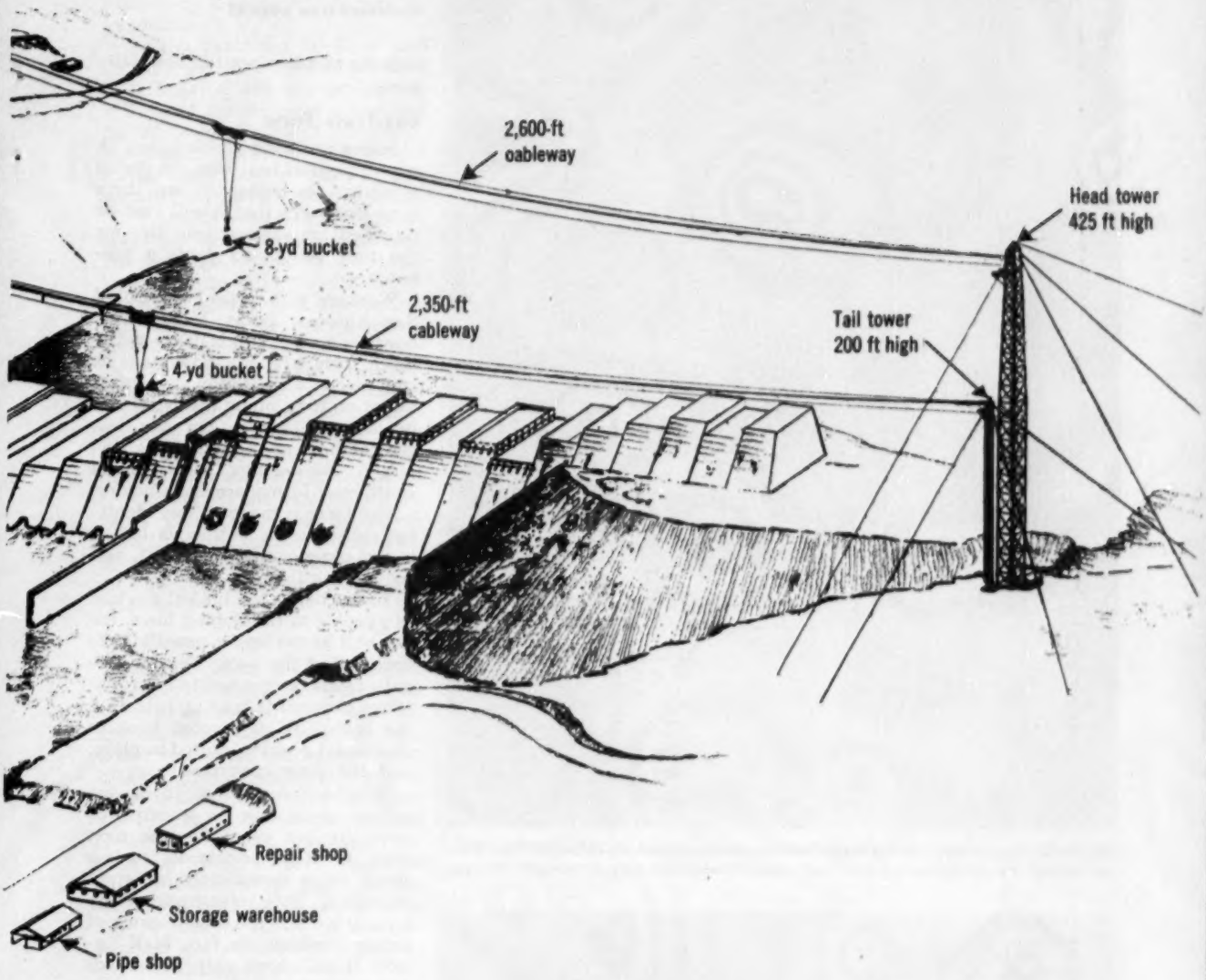
- 7½-ft concrete lifts
- Televised cableway controls
- Box-truss cantilever forms
- Pre-cooling in aggregate silos
- Remotely controlled bucket opener

By ALBERT C. SMITH
Associate Editor

Here is the first of two articles on this $25 million job in Missouri. Next month—aggregate production, batching and refrigeration.

IF YOU EXPECT to build any dams in the near future, it will pay you to keep an eye on Table Rock Dam in Missouri. It's fast becoming a proving ground of revolutionary ideas.

They're pouring 7½-ft concrete lifts, operating a closed-circuit television system, placing concrete



Concrete placing averages 15,000 yd per week. Advanced stage of dam (above) will not be reached until late this year.

# of New Ideas

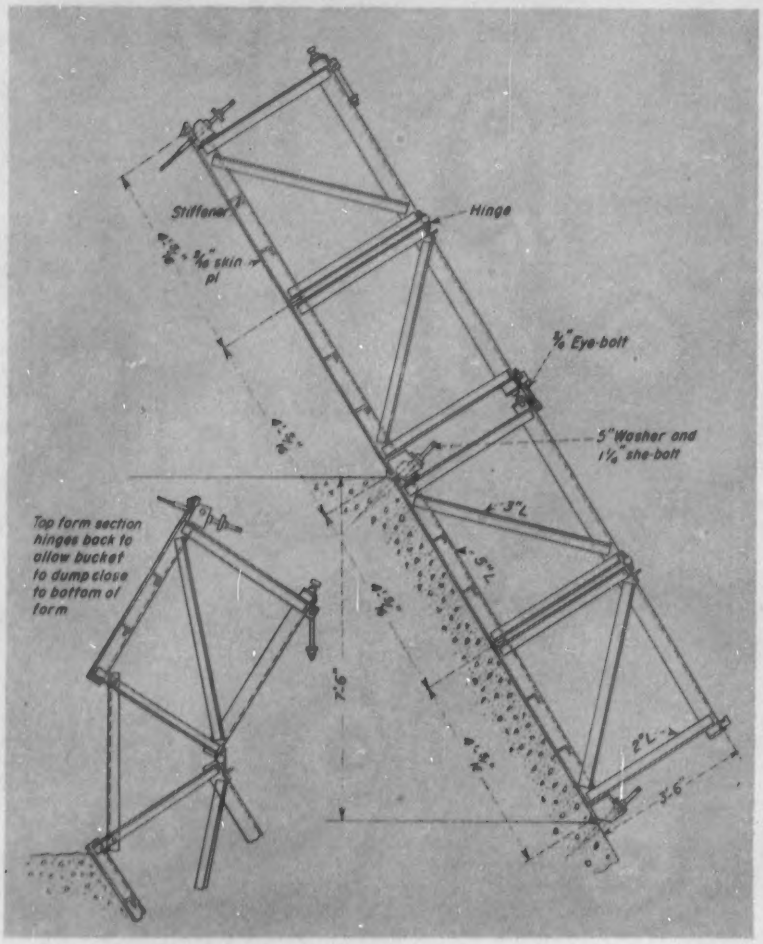
against box-truss cantilever forms, and doing lots of other things that may set the pace for future dam building.

Pioneering these new methods is a joint-venture firm of Morrison-Knudsen Co. and five associates. Their $24 million contract calls for placing 1,300,000 yd of concrete in a 1,600-ft dam, and 3,300,000 yd of fill in a 4,800-ft embankment. The dam is only 25% complete, but its giant monoliths already tower high above White River, where it cuts through the heart of the Ozarks.

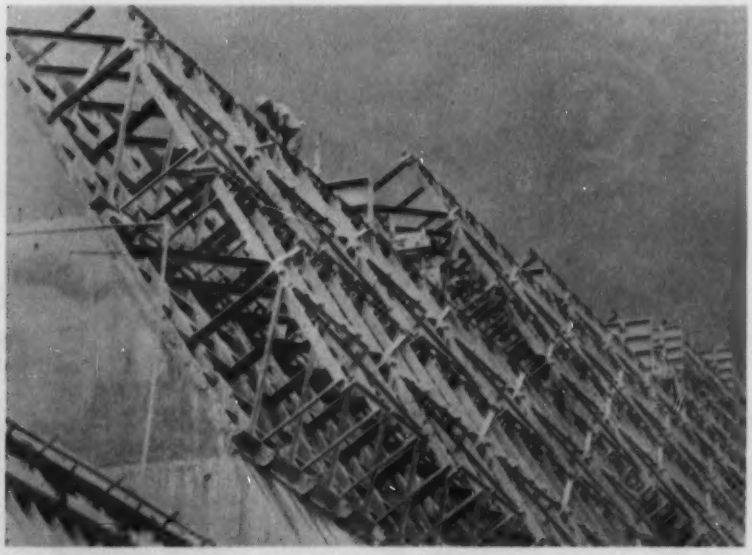
Top feature of the job is the 7½-ft concrete lift. In a radical departure from the standard 5-ft design, the U. S. Army's Corps of Engineers offered the high lift as an alternate method. It was virtually untried in this country, but M-K accepted the challenge. They knew that a 7½-ft lift would mean a third less form handling. And on a big job that's a sizable item.

There are disadvantages, too. Concrete has to be placed quickly and vibrated thoroughly to keep it alive because specifications require

Box-Truss Form Holds 7½-ft Concrete Lift



SLOPING faces of dam require rugged box-truss forms to prevent deflection. Top section of form for downstream face hinges back to permit close concrete dumping.



LOWER PANEL of form is anchored to two lower lifts. Both panels are anchored with same line of bolts, but lower panel can be released without disturbing top.

TABLE ROCK DAM . . .
Continued from page 63

that the mix be placed in five stair-steps.

Box-Truss Form

Forms are a big problem, too. A new type unit has been developed to contain the higher lift, and there is no assurance that it will ever be salvaged for another job. But for the time being, it's doing a top-notch job.

Working with Dixie Form Co. of San Antonio, Texas, M-K developed the unit as a box-truss cantilever form. Its big advantage is resistance to deflection, a critical factor on the sloping upstream and downstream faces. On the less critical sides of the monoliths, enlarged Blaw-Knox conventional cantilever forms are satisfactory.

The form is made in two identical sections; the bottom is bolted to the completed concrete lift, and the top cantilevers.

To discharge the bucket as close as possible to the sloping form, the top half of the upper panel hinges back out of the way. This is done with ratchets attached to the form. When concrete is built up half way, the half-panel is pivoted back to its normal position, bolted in place, and the pour continued.

After a minimum of 36 hr, the bottom panel can be leapfrogged over the top panel for the next pour. Or it can be transferred to a form on a completely different monolith. This interchangeability greatly reduces the total number of forms required. In fact, M-K figures it will need only two-thirds the number of form sets normally required.

Key feature of the form is the anchor bolt assembly. One line of bolts anchors the lower panel to the second lift from the top. A second line of bolts anchors it to the top lift and also ties together the top and bottom panels.

The bolt assembly permits simple dismantling of the bottom panel for leapfrogging. A nut releases the bottom panel from the bolt without affecting the anchoring of the top panel to the concrete. When a base panel is released, it is hoisted by a small crane and erected on top. Handling time is about the same as with conventional forms.

During cold winter months, the back of the form's skin plate is

coated with ⅜ in. of K-Kote, an asphalt-cork compound, to provide insulation.

Despite problems, M-K is sold on the 7½-ft lift. They've invested in it heavily, and it's paying off.

Bulk of the concrete is handled by an 8-yd Travelift cableway that places an average of 140 yd an hr. It's a fast rig. Made by Superior-Lidgerwood-Mundy Corp., the Travelift features simultaneous operation of carriage and bucket. The carriage travels at speeds up to 1,800 fmp, and the bucket is hoisted at speeds up to 470 fpm.

To maintain a fast placing schedule, M-K concentrates on eliminating the two usual bottlenecks — picking up and dumping buckets. Slow handling at the pickup point normally results from the fact that the cableway operator, located at the hoist, cannot see the picking up or landing of the bucket on the delivery cars. He gets his directions from bell signals, which often slow the operation. If he could see the bucket, handling would be much faster.

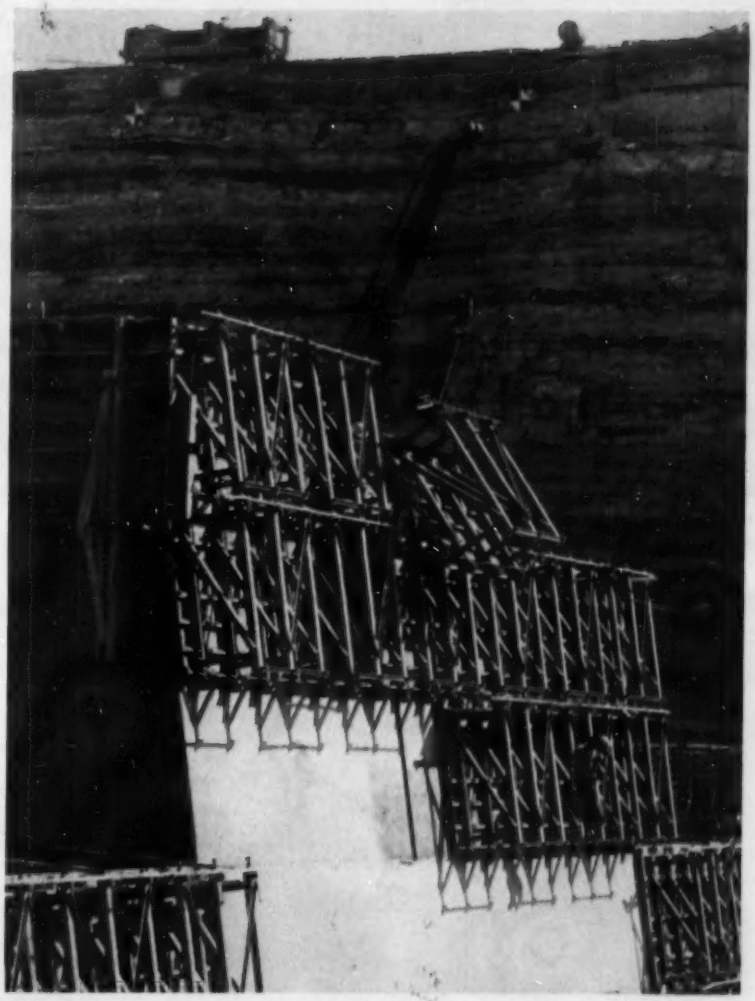
Television

So M-K set up a self-propelled tower which rides the same tracks as the bucket-carrying railroad dinkey. From this tower, the operator can watch the bucket as he lifts it. Then, when he is ready to move it out to the dam, he raises his eye to a television receiver mounted overhead, and sees the cableway hoist sheaves nearly a half mile across the river at the stationary head tower. By watching the sheaves on TV he can coordinate the simultaneous traveling and lifting of the load.

Coordinating the movements of the carriage and load is the operator's primary duty because a single 500-hp motor powers both drums. One drum handles an endless load line, and the other handles an endless carriage line.

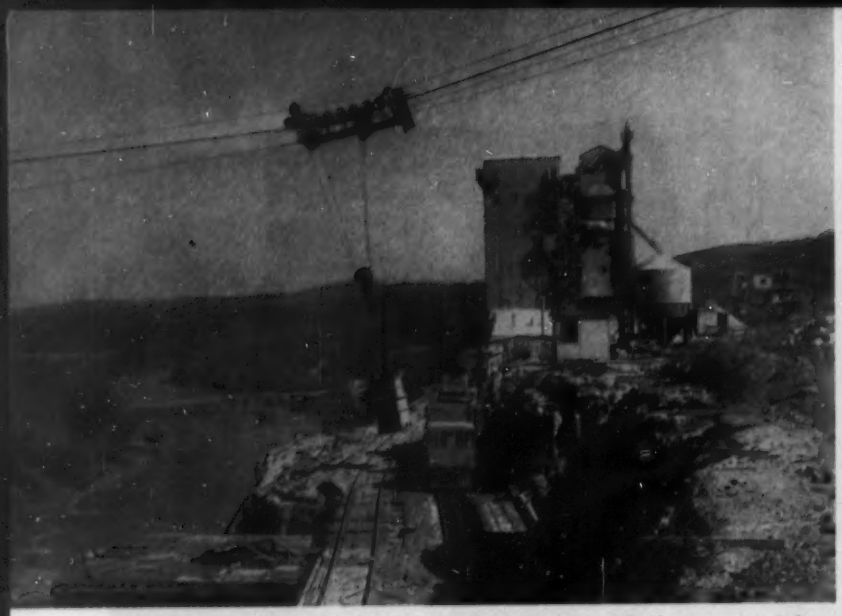
Power is transmitted to the drums thorugh clutches that can be engaged only when the motor is stopped or turning at the same speed of the drum. If the operator wants to mesh the load drum with the carriage drum, he watches the marked sheaves on TV until they are turning at the same speed. Then, he coordinates the two units.

Tachometers and other devices normally help an operator coordinate movements on this type cableway, but their precision cannot compare with that possible

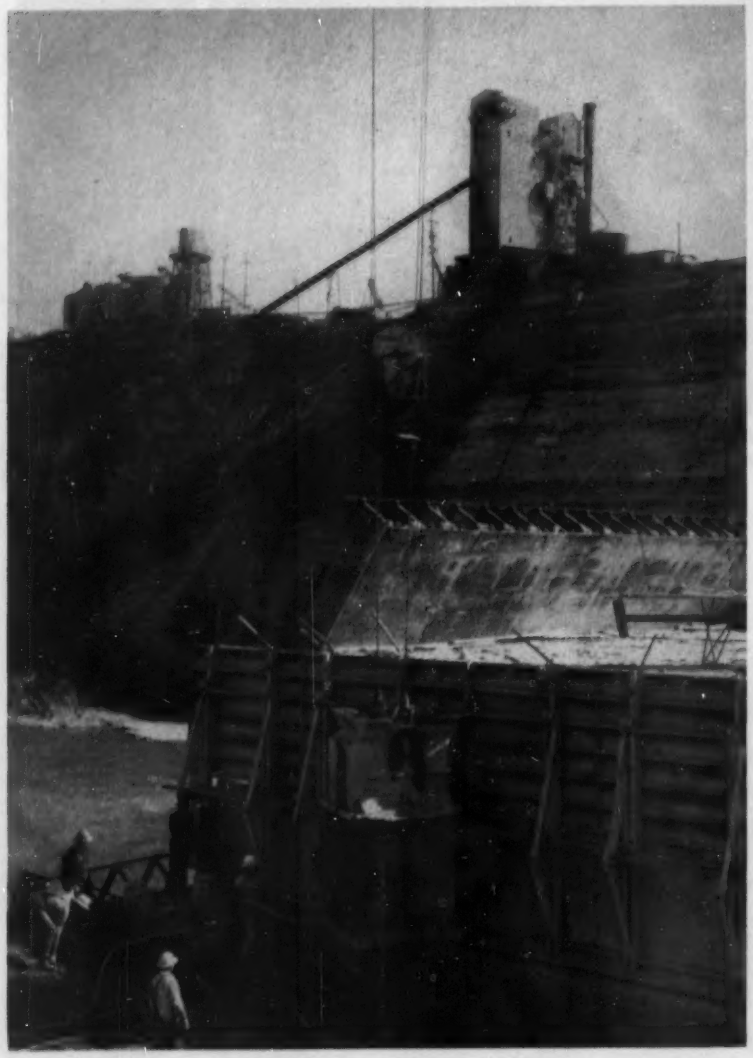


SMALL HYSTER CRANE leapfrogs lower panel of upstream form over top panel for next pour. Panels may also be transferred to other monoliths to multiply use of forms.

BULKHEADS exposed for long periods are covered with Dow 1-in. Styrofoam strips to insulate concrete and prevent temperature changes from cracking blocks.



4-YARD BUCKET is lifted from dinkey and pulled toward dam. Cableway operator's house overlooking pickup point contains controls for hoist mounted on traveling head tower.



CONCRETE is dumped from bucket and consolidated with five Malan one-man air vibrators. Pour is built up in five stairsteps. Note box-truss forms on sloping downstream face.

TABLE ROCK DAM . . .

Continued from page 65

from a firsthand view by television. Cableway equipment is expensive and demands the best care.

When the bucket nears the dumping point, the operator receives instructions from a bell boy on the dam. If the boy signals, "Down 3 ft," there's no guesswork on the operator's part. He knows exactly how many revolutions of the sheaves will lower the bucket 3 ft, and he watches them on the TV. When the bucket is emptied, the operator starts it back toward the tail tower.

Fortunately, the television system is relatively inexpensive. At the hoist house, the equipment consists of an RCA camera with a short focal length lens and an amplifier. A coaxial cable 5,000 ft long carries the signal across the river to the receiver in the tower. Along the cable, the signal is boosted at three points. A transformer at the receiver compensates for the 75-ohm resistance of the cable and the 300-ohm resistance of the set. Reception is excellent.

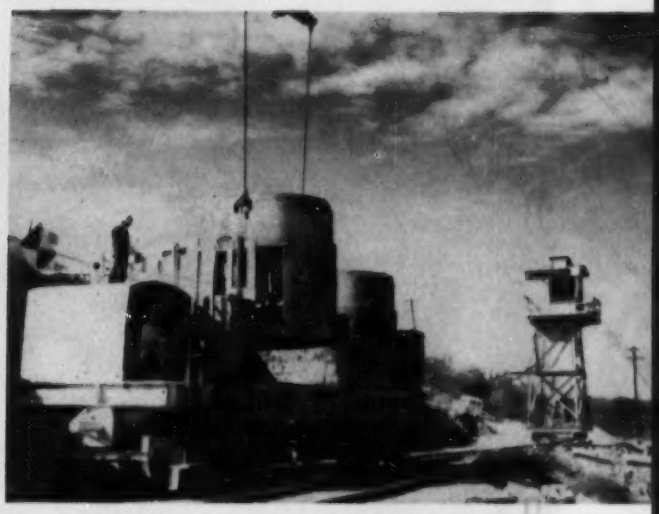
Television is used only on the 8-yd cableway. A 4-yd conventional cableway that operates next to the big cableway does not require that the operator observe the drums firsthand. He controls the rig from a booth on the edge of the bluff overlooking the bucket pickup point. From here, he can quickly handle buckets while remotely operating hoists mounted on the traveling head tower. The 4-yd cableway pours miscellaneous walls and the stilling basin and also helps with the monoliths.

Speeding the discharging of buckets is still a problem. A worker must attach a compressed-air line to the bucket to open it, and this is slow and dangerous. But M-K will soon begin testing a new bucket made by Blaw-Knox. Its hydraulic opening system will be cocked automatically when concrete is dumped in at the batch plant. The bucket will be opened by simply triggering with a hooked pole. Some day this device may be replaced by a remotely-controlled radio system.

Personnel

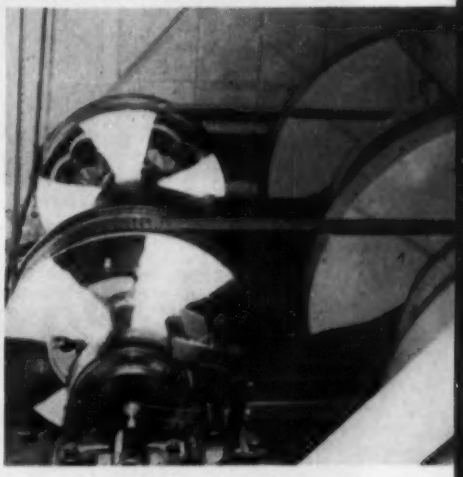
A. W. Campbell, Jr. is project manager, C. W. Bolton is project engineer, and H. I. Maxwell is general superintendent for Morrison-Knudsen. Lincoln Sherman is resident engineer for the Corps of Engineers, U. S. Army.

TV Aids Cableway Control



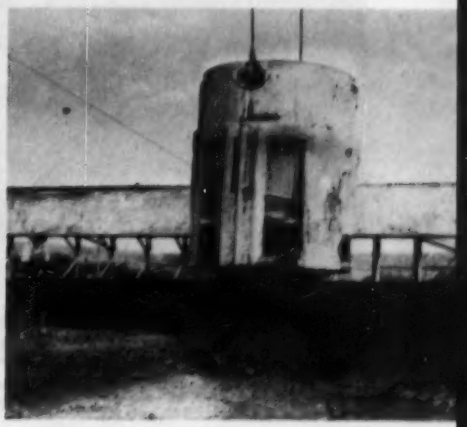
Operator can see bucket pickup . . .

Self-propelled tower gives operator firsthand view of bucket switching. This is much faster than conventional system in which operator is at hoist and must rely on bell signals. Here, loaded bucket is hoisted, dinkey returns to batch plant, and empty bucket is refilled.



. . . Then watch hoists on TV

Paint markings on hoist sheaves are constantly visible on TV. They show relative speeds of sheaves, which helps operator coordinate drums. Below, 8-yd bucket dumps close to hinged-back box-truss form.



HEATED enclosure 40 ft wide permits deck paving during middle of tough South Dakota winter. Exposed overhangs are poured in forms lined with Balsam-Wool insulation. Space under deck between stringer bottoms is heated with propane gas units.

Deck Paving at 10 Below Zero

CORRUGATED steel panels for deck forms are laid over wood ribs spaced 24 in. apart and supported at each end in wire hangers. Contractor reports labor saving of 15%.

DECK PAVING in South Dakota during the middle of winter is always tough. The temperature often drops below zero, and there's plenty of snow.

But outfits like Bonesteel & Hyde of Pierre, S. D. are accustomed to these conditions and take them in stride. This winter they paved the deck on the new Bad River Bridge at Fort Pierre, doing some of the pouring at a temperature of –10 deg. Temperatures dropped as low as –20 deg during curing.

To keep the job going, the contractor erected a 40x84-ft heated enclosure over the deck. It was made of 40-ft scissor trusses spaced 14 ft apart and connected with purlins. It was broken up into six units each 14 ft long and mounted on 2x6 skids. Four men could easily slide a unit along the outside form. Canvas was placed over the top, and the inside was heated by two Herman Nelson oil-fired burners.

Overhangs beyond the reach of

WORKER end-welds studs to stringer with Nelson gun at rate of five or six a min.

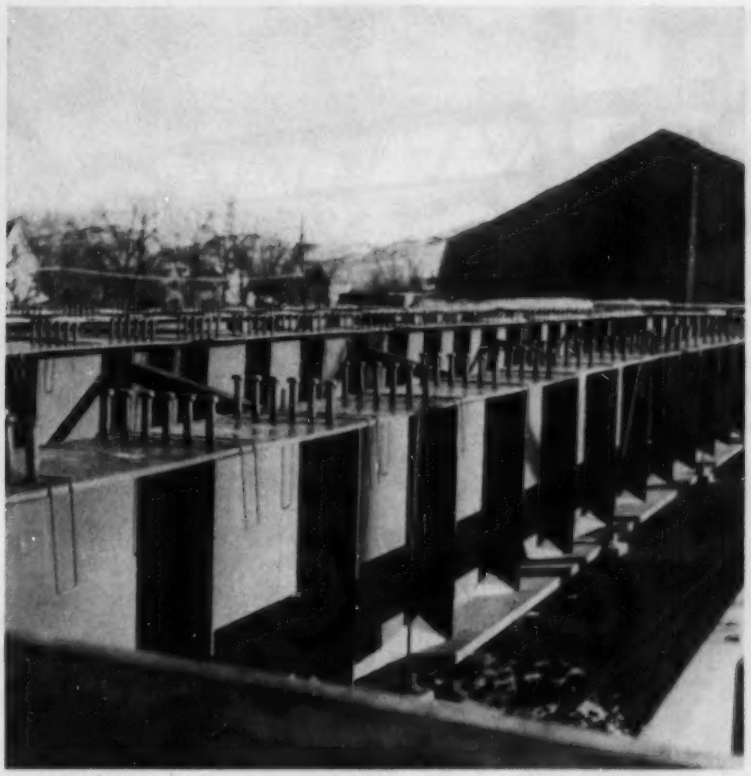
the enclosure were protected with Balsam Wool insulation on the forms. The bottom of the slab also had to be protected. Corrugated steel was placed between the lower flanges of the steel stringers, and the space between steel sheets and slab was headed with White propane-gas-fired burners.

Corrugated steel panels played an important role in forming the deck. In fact, the contractor reports that the high-strength Corruform cost about two-thirds as much as wood and was used a minimum of six times. Labor saving was about 15%. Panels were placed on wood ribs 24 in. apart end-supported in wire hangers.

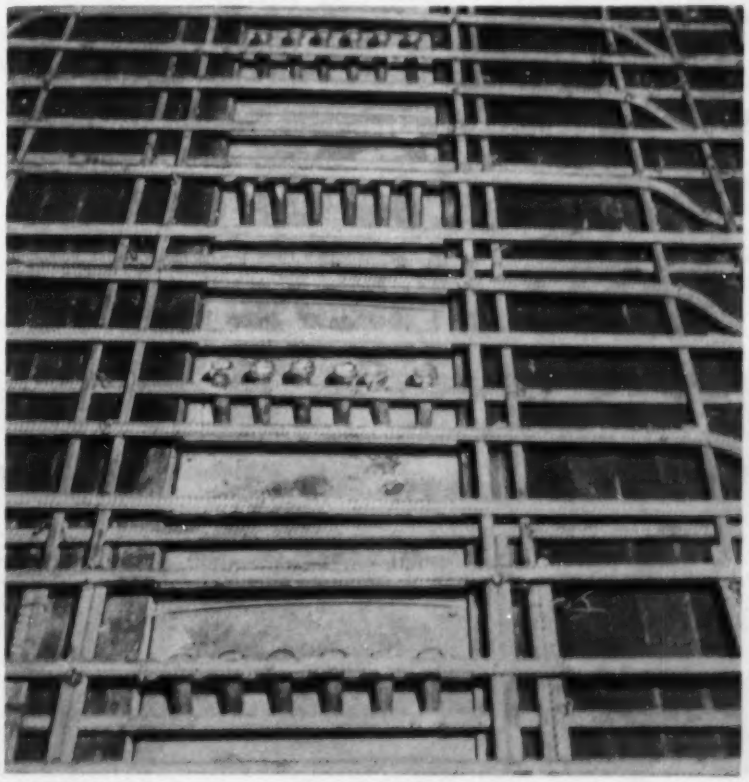
A third factor which helped cut costs on the job was the use of Nelson end-welded studs as shear connectors. For the contractor, it paid off because reinforcing steel could be tack-welded directly to studs, eliminating chairs and slab spacers.

For the fabricator, Egger-Scudder Co. of Sioux Falls, S. D., there was a big advantage because the studs could be welded to the flanges of girders four times faster than conventional shear connectors. With a wooden loading frame, an operator welded studs at the rate of five or six a minute. They were spaced on 2-in. centers in each row, and rows were from 12 to 24 in. apart.

According to bridge engineers of the South Dakota Department of Highways, the chief reason for substituting studs for the more-normal angles was the fact that studs permit better consolidation of concrete.



STUDS welded to top flanges as shear connectors are spaced 2 in. on center in rows 12 to 24 in. apart. Studs were selected because they permit good concrete consolidation.



REINFORCING bars are easily tack-welded to studs, eliminating need for chairs and slab spacers. Studs can be welded to flanges much faster than normal connectors.

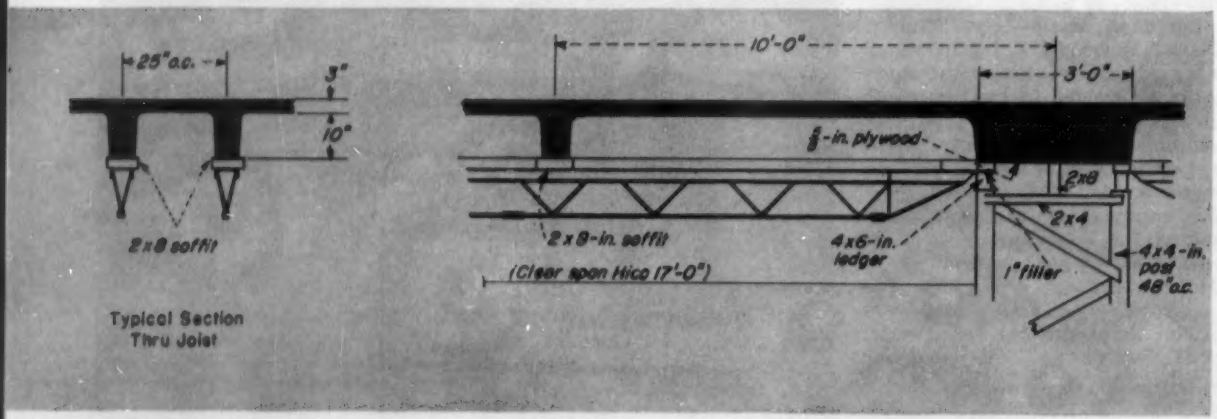
WORKMEN PLACE adjustable girders which will serve as stringers for grid slab forming. The girders eliminate 90% of the upright shores normally needed for this type construction and cut the contractor's forming costs better than 10c per sq ft.

Serving as temporary stringers...

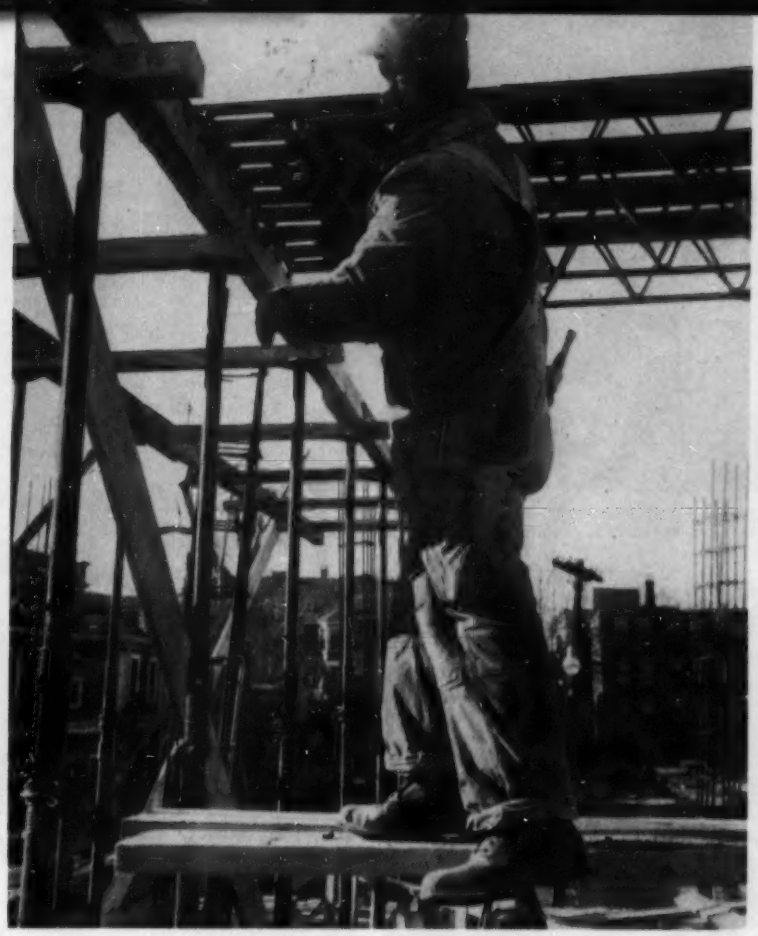
Adjustable Girders Speed Slab Forming

TEMPORARY STRINGERS made from beam-type adjustable form supports eliminate nearly 90% of normally required upright shores and cut 10c per sq ft from the costs of forming reinforced concrete floor slabs.

That is the experience of John A. Volpe Construction Co., Malden, Mass. Volpe is using Webrib Steel



POSTS SUPPORT beam forms as well as adjustable girders. Turnbuckles fitted to underside of girder compensate for camber prior to erection. Camber can be further adjusted, if necessary, from underneath the deck after concrete has been poured.



ADJUSTABLE FLANGE is locked in place with a simple turn on a bolt. Shoring and struts (left) support girders and forms for reinforced concrete structural beams.

Corp's Hico girders for forming slabs on the $1 million, three-story Joslin Diabetic Clinic in Boston, Mass. (The clinic is the realization of Dr. Eliot Joslin's dream of a place to teach diabetics how to administer to their own needs and thereby save on expensive, long-term treatment.) With less than 64,000 sq ft of slab on the 168x63-ft building, Volpe's form savings may exceed $7,000.

Framing

The job is reinforced concrete with grid-type slabs and bays averaging 17x48 ft. Normal form assembly for this type slab costs between 45 and 50c per sq ft. Volpe forms for about 35c.

Columns on the job average 16 in. sq and are spaced approximately 17 ft on centers. Vertical reinforcing steel is placed, and columns are formed with ⅝-in. plywood braced by lengths of 2x4's secured with snap ties and hairpins.

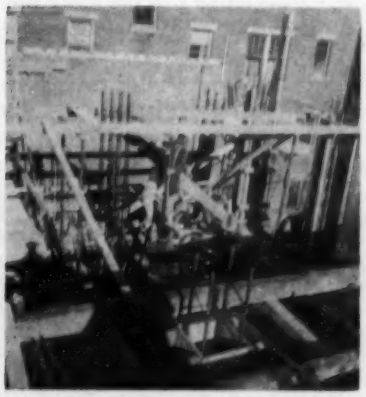
When columns are formed the contractor places on either side of them continuous 2x10-in. plank sills as seats for two lines of Acrow adjustable shores spaced 48 in. on centers. Short sections of 4x4's connect the shore heads. Over these Volpe places continuous lengths of 4x6-in. ledgers to support sheets of plywood which serve as bottom forms for beams. These average 42x16 in. Spandrel beams, averaging 30x13 in., are formed the same way. Placing the Hico girders is next.

Forming

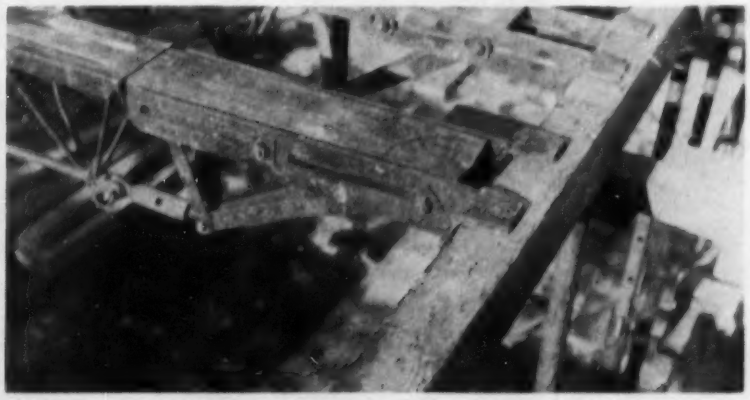
The girders themselves are nothing more than various-sized lattice sections fitted with turnbuckles at their lower bars. The turnbuckles make it possible for Volpe to compensate for camber in an entire girder before the load is applied. Use of these girders requires no special skill or tools. They weigh less than 10 lb per lineal ft; they are easy to carry about and place; and they can be fitted together to make spans up to 27 ft long.

Two workmen can hand girder sections up to other workmen who set them over the ledgers. They are spaced 25 in. on centers. Once they are in place, the bolts on each end are tightened to secure the adjustable flanges on the ends. Then 2x8-in. soffits are set over the top girder flanges and metal pans nailed to the soffits. Volpe next

(Continued on next page)



SUPPORTS for columns and beam forms are placed before workmen set the girders.



UNITS SIT on wooden 4x6-in. ledgers. Girders come in various sizes which can be fitted together to make lengths up to 27 ft. Supplier furnishes girder layout.

FORMING for slab starts with the placing of 2x8-in. soffits over the top flanges of the girders to serve as nailers. Metal pan forms then are nailed to the soffits.

CONCRETE is placed by 1½-yd motor buggies which run up specially constructed 6% incline material supply ramp. John A. Volpe Construction Co uses two buggies.

ADJUSTABLE GIRDERS...
Continued

places reinforcing steel in beam and spandrel pockets and forms up the sides with plywood. The deck now is ready for concrete.

Concreting

Concrete is supplied by transit-mix. Volpe runs Whitman's 1½-yd motor buggies up a 6% incline ramp to carry concrete to the second floor deck. Cranes and buckets deliver concrete to the third story.

Girders are left in place until the concrete is fully set. After a few days, half the girders can be removed and reused on upper floors. This still leaves enough support for the deck and eliminates the need for space-taking, post-type reshoring.

Stripping

Stripping the forms is a neat operation. To free the girder, workmen loosen the flange bolt and slide back the flange. Soffits, pans, and form wood follows easily. When the girders are to be reused, they are bundled and lifted by crane to the next floor.

According to Gus Davis, Volpe's job superintendent, the system is cutting forming time by 20%. "And it could be better," said Davis, "if the slabs were larger per floor. We can't take advantage of a long, continuous typical area. That's where the girders could really pay off."

Webrib sells ($5.50 per ft), rents (30c per mo, per ft), or contracts to install the girders for lump sum prices at a guaranteed cost per sq ft. Services include layout of the girders, field drawings, freight, and assembly. Use of the Hico girders is not limited to grid slab construction. They can substitute for stringers on all structural concrete slabs, including pre-fab block fireproofed slabs and concrete arches.

Fork Lift Truck Is Mason's Helper

A HANDY pint-sized fork lift truck that is pushed by hand solves many brick moving problems for the contractor on this job. Made by the West Brick Buggy Corp., the 375-lb rig carries 24x32-in. pallets 10 in. high while loaded down with between 240 and 400 bricks. The buggy measures only 56 in. long, 48 in. wide, and 45 in. high. Features are pneumatic tires, hand brakes, and a hand-operated hydraulic pump—for lifting.

SWINGING LADDER moves the cutter head through a 17½-ft arc while the hull remains stationary, enabling the dredge to work in narrow canals. All working parts on the 18-ton dredge, including cutter head, ladder, and spuds, are hydraulically controlled.

Small Dredge Digs Narrow Canals

SINCE ITS HULL remains stationary while its ladder swings through a 17½-ft arc, a new all-hydraulically operated small dredge does not require the room needed by most dredge hulls to maneuver the cutter head and intake line. Four spuds, instead of the usual two, hold the dredge while the hydraulically actuated ladder moves the cutter head up and down and from side to side.

The swinging-ladder-type dredge especially designed for digging and maintaining narrow irrigation and drainage canals, got a thorough testing at Baltimore's Friendship International Airport where it dug a 3/4-mi-long, 5-ft-deep drainage canal to relieve flood hazards. The Ellicott Machine Corp. of Baltimore is the manufacturer.

Working in materials varying from light sand to gumbo-like clay and heavy silt, the dredge delivered an average of 80 yd an hour through its 6-in. discharge line.

All working parts, including the cutter head, spuds, ladder, and directional control of the discharge pipe, are hydraulically actuated. The hydraulic circuit consists of one hydraulic pump, five fluid motors, and nine cylinders. Motors and cylinders are controlled by two Hydreco double-acting valves operated by levers located on a console-type panel. One man can control every working part of the dredge from this panel.

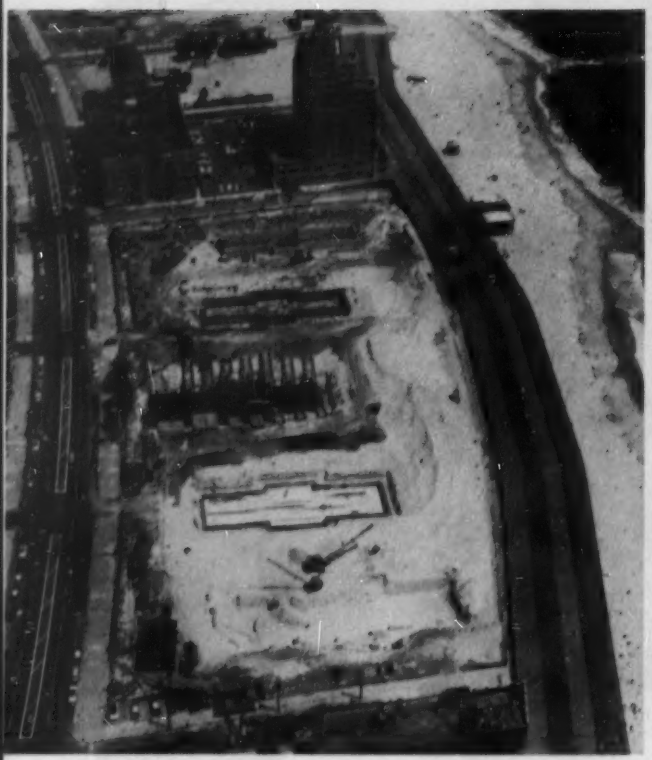
A 60-hp diesel engine is the only power source. Besides supplying prime power to the discharge pump, it also maintains a maximum pressure of 2,000 psi in the hydraulic system through the hydraulic pump which is connected directly to the engine's drive shaft.

Forward and reverse motion and the speed of the cutter head are controlled by a single lever connected to one of the double-acting valves. Double-acting cylinders, on each side of the inboard end of the ladder, control the direction of swing.

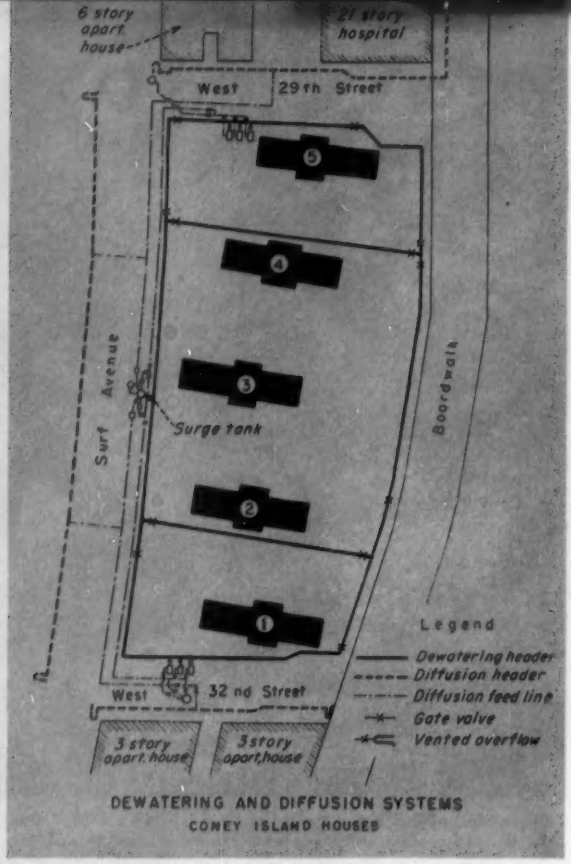
The dredge is held in position by two spuds at the bow and a positioning spud at the stern. In addition, a walking spud is located in a well at the stern. Each of the three positioning spuds are raised and lowered by a winch connected to a gear reducer through a fluid motor. A double-acting hydraulic cylinder actuates the walking spud to move the dredge forward.

The 18-ton dredge has an all-welded hull 11-ft wide, 3-ft deep, and 28-ft long. It was transported to the site by truck and placed in the water by crane. It was not necessary to dismantle the dredge for transportation.. To get the dredge from the launching site to the work area, the suction pump was started and water was ejected from the discharge pipe with enough pressure to move the dredge. The discharge line was attached so that it could act as a rudder to change direction as the dredge floated to the work area.

When the dredge is working, the 6-in. discharge pipe is elevated 13 ft above the water line so that it can easily discharge over a high berm without additional extensions. According to Ellicott engineers, the dredge is powerful enough to deliver material through pipe lines for distances up to 250 ft without a booster.



HOUSING SITE alongside ocean front is kept dry by one system of wellpoints while another maintains surrounding water table.



DEWATERING SYSTEM pumps water from site and discharges into surge tank. From there, water flows into diffusion system.

When adjacent structures are menaced by drawdown . . .

Wellpoint Team Dewaters Site

HOW DO YOU DEWATER a sandy foundation without lowering the water table under adjacent structures?

That was the problem facing John A. Johnson & Sons of Brooklyn, N.Y., when a 21-story hospital at the Coney Island, N. Y., oceanfront stood less than 100 ft from the site of their big housing job. If underground water was removed from beneath the hospital, it might slide or settle. And many smaller structures surrounding the site also were in danger.

The solution was unique. Johnson installed two systems of wellpoints, one for dewatering the foundation area and another for diffusing the same water back into the ground under adjacent buildings. The two integrated systems operated around the clock for three months. They kept the foundations for the housing project dry as a bone, and the surrounding water table never budged. It took a lot of close watching, but it worked. Not a single claim was submitted by an owner.

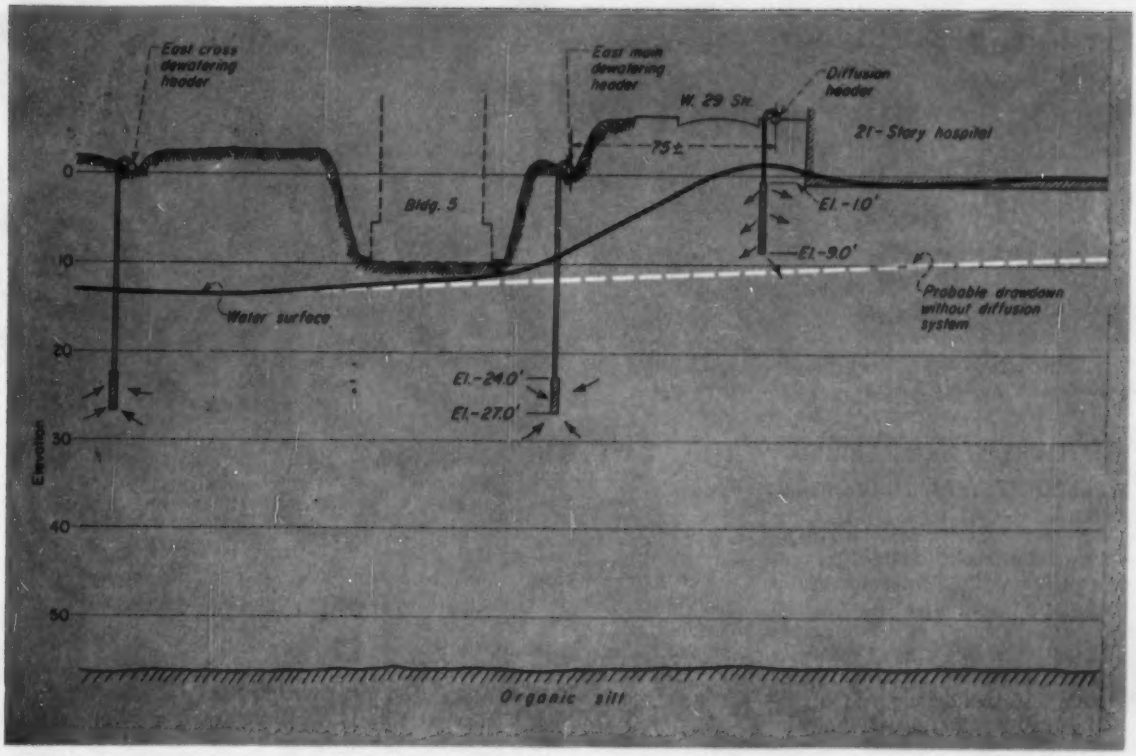
Johnson's superintendent, Mike Mascia, had the job under way before the unusual dewatering problem came up. He had surrounded the four-block area with a ring of Griffin wellpoints and planned to lower the water table from elevation –2 to –15 so that he could pour foundations for five 14-story apartment buildings. The foundations were designed as huge mats of concrete to take advantage of load-supporting buoyancy available from the high water table. The Atlantic Ocean was only 150 ft away.

But New York City Housing Authority engineers foresaw the possibility of danger from excessive drawdown. Borings showed deep layers of organic silt at elevation –55 and again at elevation –123. Lowering the water table under the adjacent hospital, they reasoned, could reduce the buoyancy of the foundations, thus boosting the load on the silt beds and increasing the chances of settlement.

To determine how much drawdown would result, the contractor sank a number of observation wells both inside and outside the site. He then began pumping from a single line of wellpoints and continued for two weeks. The results were conclusive. The sand's extreme permeability extended drawdown 1,000 ft along an axis parallel to the ocean. The test indicated that full operation of the dewatering system could probably lower the water table under the hospital at least 8 ft. This would undoubtedly result in some type of failure.

Two Solutions

Consulting engineers Moran, Proctor, Muesser and Rutledge offered two solutions—driving steel sheeting between the two areas, or constant replacing of the water under the structures. Sheeting costs would have run over $1 mil-



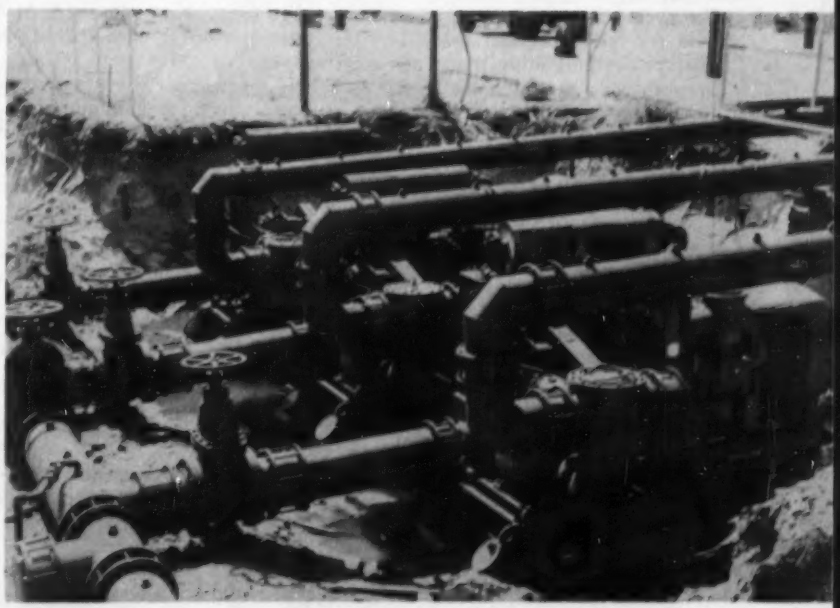
SURFACE of underground water is pulled below new foundation by ring of dewatering wellpoints. Adjacent diffusing wellpoints recharge area under existing structures to maintain normal high water table and eliminate danger of settlement.

While Recharging Surroundings

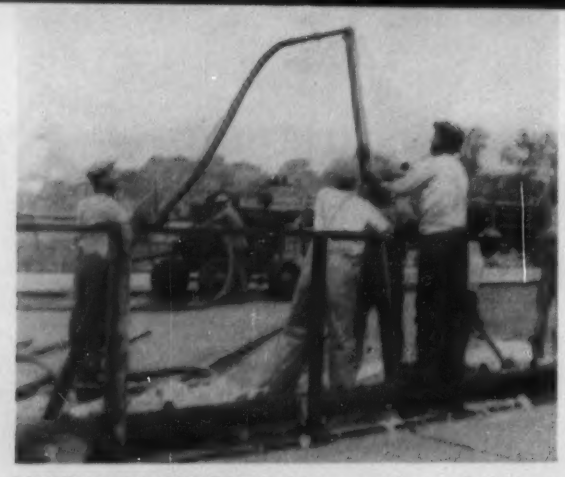
lion, so the contractor decided on a diffusing system. Its cost was about $250,000.

To make sure the system would work, Mascia installed a 200-ft test section in the critical area alongside the hospital. Basically, it was the same as a wellpoint system except that the conventional 3-ft length of screen at the base of each point was lengthened to 8 ft 3 in. to increase the discharge area. Points were jetted 4 ft apart into 29th Street at the east curb line.

But before the test was started, detailed surveys were made of all adjacent buildings. At the suggestion of Johnson's insurance carrier, the American Motorists Insurance Company, teams made an inch-by-inch study of the surroundings. Every crack was recorded, and some were even photographed. A licensed civil engineer was retained to make detailed drawings of all critical areas. As a final precaution, property owners were asked to sign reports on the



BATTERY of three Griffin wellpoint pumps handles dewatering system which surrounds ocean front site of five 14-story apartment buildings. Water is pumped to surge tank.



DIFFUSION WELLPOINT is jetted into exposed area of street near curb. Screens are lengthened to increase discharge area.

HEADER PIPE on curb runs inside prefabricated fence. Later in job, fence panels are erected at dangerous openings in buildings.

WELLPOINT TEAM . . . **Continued from page 75**

conditions of their buildings.

When the diffusion test section was installed, the contractor began pumping. Groundwater readings were taken hourly at a number of observation wells, and, by carefully coordinating the two wellpoint systems, Mascia dried the foundation area without varying the water table level under the adjacent buildings.

But operational problems soon developed. Controlling pumping pressures became difficult and often resulted in water hammer. Besides, as the test continued, more and more pressure had to be applied to the diffusion system to get adequate discharge. Apparently, rust, caused by the briny water, was seriously clogging screens.

The test was discontinued, and Mascia set out to extend the diffusion system and solve the problems exposed during the test. Diffusion wellpoints were jetted into the north side of Surf Avenue and the west side of 32nd Street. This extended the system to cover all adjacent structures and required about 1,600 ft of headers and 400 points.

Surge Tank

Instead of connecting the two systems directly, as was done in the test, Mascia erected a steel surge tank at the center of the lines. It was 25 ft high, 10½ ft in dia, and had an overflow pipe connected from the top to a sewer. Main purpose of the surge tank was to maintain a constant head on the diffusing system. Water from the dewatering system was pumped to the tank, where it flowed by gravity into the diffusing system at a low pressure of 3 psi.

Solving the corrosion problem was tougher. It required a number of separate treatments. First, a cathodic protection system was installed in the headers to retard galvanic action between the various metals. This was done by placing zinc rods about 6 ft apart. The rods were carefully monitored to detect any excessive dissipation of zinc, which could have formed clogging hydroxides.

A second type of corrosion protection was a special vinyl paint, applied to all diffusion headers and feeder piping. Unfortunately, the dewatering system already was installed and could not be coated.

To remove any insoluble particles, 50-mesh filters were installed on both inflow and outflow sides of the surge tank. And 100-mesh filters were placed at each diffusion swing joint.

When the complete system was in place, Johnson began pumping. At first, pairs of pumps on two sides of the dewatering system were operated simultaneously. But later, only one pair was required.

Observation wells were checked hourly, and work on the foundation of the apartment building nearest the hospital went along smoothly. The surge tank had eliminated the water hammer, and the cathodic protection system was doing its job.

Clogging

But the system required close watching. As the months passed, both rust and organic particles again began to clog some wellpoints, despite precautions. Mascia made periodic tests on each wellpoint to determine the rate of discharge. If it was too low, he flushed the screen by forcing in high-pressure water, then quickly removing it with a double-acting valve and pump.

Meanwhile, a huge foundation mat was poured for the apartment building at the critical area near the hospital. As the weight of the foundation increased, Johnson progressively raised the groundwater level in the immediate area by reducing the number of dewatering wellpoints. This had the added advantage of minimizing the job of the diffusion system.

Dewatering and diffusing systems operated three months during which five foundations were poured. When all five had been built high enough to resist the buoyancy of their massive foundations, the wellpoint systems were disconnected and groundwater returned to its natural level.

The method was a complete success. Not a single claim was submitted by an owner, and no injuries were caused by operating the diffusion system in a public area.

Safety

Accident prevention was a major problem when Mascia decided to install his piping in three city streets. The dewatering system was inside the site and protected by a high fence. But how could he do an economical job of keeping pedestrians away from the hazardous network of piping at the curbs.

Mascia knew that later in the job he would need a large number of prefabricated fence panels to keep workers away from open areas in the apartments. So, he made them up early and placed

(Continued on page 79)

BIGGER PAYLOADS AND FASTER CYCLE TIMES FOLLOW THIS No. 12

on the northeastern extension of the Pennsylvania Turnpike

Marsolino Construction Company, Uniontown, Pa., is making efficient use of big yellow equipment on the Norristown-Scranton extension of the Pennsylvania Turnpike. Among the Caterpillar units in its line-up are five DW21s hauling, three D8s bulldozing, two D8s push-loading and two No. 12s grading haul and access roads. This use of the No. 12s enables Marsolino to get even bigger production from the high-speed, big-capacity CAT* DW21s.

On contract after contract where money-making performance calls for long hauls on wheels, the maintenance of haul roads by motor graders results in bigger payloads and faster cycle times. The fast-working No. 12 has proved itself ideal for this purpose. Operators like its easy, accurate steering, positive action of mechanical controls and quick blade positioning without leaving the platform. And the unobstructed vision allows them to see the job while seated.

On this job, Caterpillar-built equipment is working 9½ hours a day, 6 days a week. A. J. Marsolino says: "Modern highway building requires a huge investment in heavy equipment. We believe in buying the best. We know from experience the best buy is Caterpillar. That's why we have standardized on it for our earth-moving and grading. Down time is a minor item but when we do have it, the parts service is excellent."

A minimum of down time and efficient, one-stop parts service—these are just two of many reasons it pays to standardize on Caterpillar. For the complete data on every earthmoving unit from graders to scrapers, see your nearby Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

USE CAT EQUIPMENT FOR MONEY-MAKING PERFORMANCE

(Advertisement)

Note the stringers of Stoody 21 which act as "buffers" between abrasive earth and bucket sides. Inside surfaces of bucket receive similar protection.

All Buckets Take a Beating... Here's the Medicine!

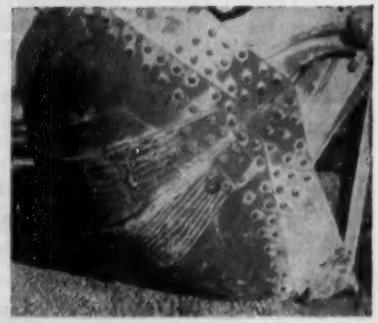
We're often asked about bucket maintenance, what hard-facing material to use and how to use it for maximum wear protection. Actually, your own equipment gives you part of the answer. Each bucket wears differently, depending upon how it is used and the kind of material handled. By watching for development of wear patterns, then hard-facing these areas at definite intervals, you'll get extended service with greatest economy. *Remember, a frequent touch-up is better than a major repair*...more economical in hard-metal and less costly in down time.

If buckets are severely worn, first build up with Stoody Manganese. For hard-facing, the alloy most commonly used is Stoody 21, preferred because of good wear resistance, fast deposition rate and low price. Occasionally, under conditions of excessive abrasion, Coated Tube Stoodite gives longer life on shovel teeth and reduces maintenance costs.

Full particulars on alloy recommendations and hard-facing procedures are in the Stoody HARD-FACING GUIDEBOOK. Ask your dealer for a copy (check the "yellow pages" of your phone book) or write direct.

Bucket teeth (top illustration) and adapters (above) are amply coated with Stoody 21. Hard-faced teeth on this job averaged two full shifts of extra service before needing additional hard-facing treatment.

These Stoody 21 beads across the bucket resist severe abrasion as it is dragged across rubble, returning for a new bite.



Lips on this clam shell are kept in good shape for a tight seal with Stoody 21.

Scoop lifts often lead a tough life. Here, lips, sides and bottoms are kept in good condition with Stoody 21. Occasional touch-ups are made as wear occurs.

See the STOODY EXHIBIT—WELDING SHOW, Buffalo, N. Y., May 9-11.

STOODY COMPANY 11972 East Slauson Avenue, Whittier, California

WELLPOINT TEAM . . .

Continued from page 76

them along each side of the headers. They provided excellent protection during the entire dewatering period. Later they were disassembled and moved into the buildings.

Advance planning gave Mascia double use for another important item on the job. He knew that closed rubbish chutes would be needed on the buildings later in the job. And by designing each chute to be assembled on the job from two channel-shaped steel-sheet sections, he was able to use the sections on foundation work for chuting concrete.

Mascia reports a big saving in time and money by chuting concrete directly into the foundation instead of placing with cranes and buckets. Foundation mats were about 180 ft long, 45 ft wide, and nearly 5 ft thick. The largest pour was 1,800 yd, and it was made in only 7 hr. That's about half the time normally required by at least four cranes and buckets.

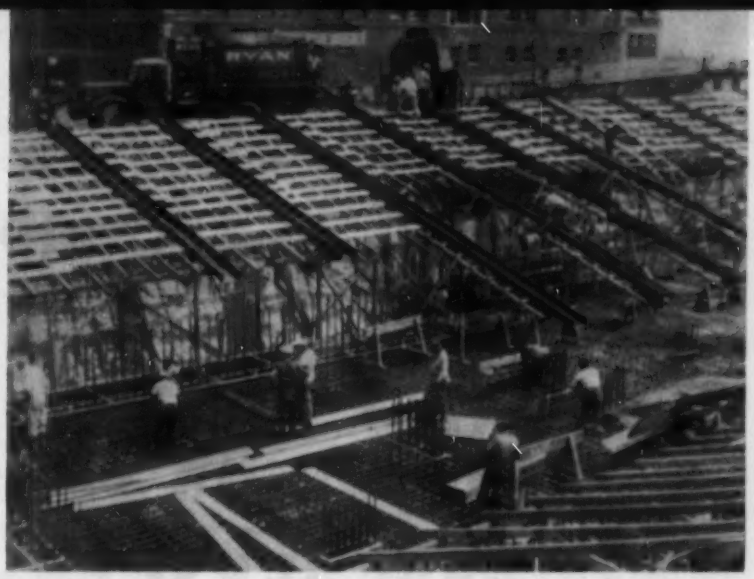
Before each pour Mascia erected simple falsework around the rim of a foundation to support chutes. Made in 8-ft sections, the chutes were quickly assembled and spotted 12 ft apart. At the beginning of a pour, they were set up to reach the middle of the mat to reduce concrete handling. As the pour progressed, end sections were removed. On the largest pour, Mascia used nearly 200 ready-mix concrete trucks operating in a merry-go-round manner on the site.

When the channel-shaped chutes had served their purpose, they were paired together with wing nuts and hung on the sides of the buildings to carry rubbish. They will still be in good shape for future jobs.

Personnel

Michael Mascia is project manager and Carl Martinez is project engineer for John A. Johnson and Sons, Inc. For Moran Proctor, Muesser and Rutledge, James Parsons is consulting engineer, and Samuel Hyman is resident engineer.

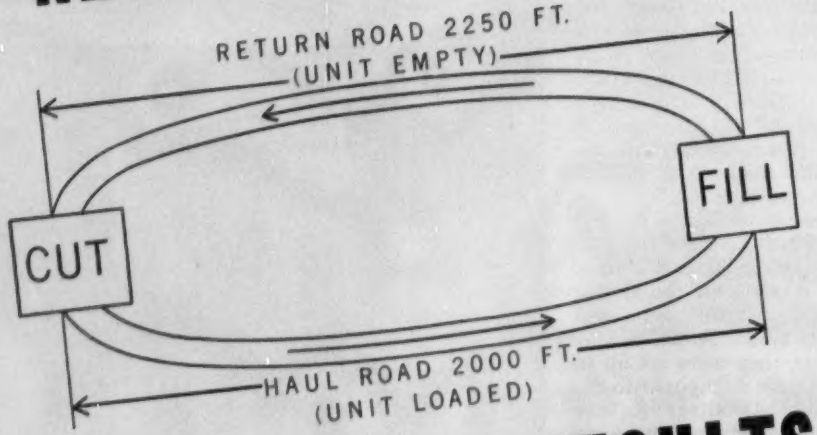
Peter Ledwitt represents the New York Housing Authority, and David Werblin is the engineer for Wellpoint Dewatering Corp. For American Motorists Insurance Co., Harry Moore is job safety engineer, and Robert Moore is consulting safety engineer.



CONCRETE CHUTES made of steel sheet in 8-ft sections permit mass pouring of huge foundation mat. Fleet of ready-mix trucks pours 1,800-yd slab in only seven hr.

CLOSED RUBBISH CHUTE is made by joining together concrete chutes shown in top photo. Simple wing nuts permit fast assembling. Chutes are supported at each floor from brackets.

CONTRACTOR COMPARES "EQUALLY RATED" SCRAPERS ON JOB IN NEW JERSEY



HERE ARE THE RESULTS

	CAT* DW21-NO. 470 LOWBOWL SCRAPER	SCRAPER-UNIT A
Average load in bank cu. yd. . . .	18.0	16.5
Total average cycle time on 4250-foot round trip	4.77 min.	5.28 min.
Trips per hour	12.6	11.3
Production, bank cu. yd./hour . . .	227	187

LOWBOWL ADVANTAGE: 40 BANK CU. YD. AN HOUR

CAT LOWBOWL SCRAPER
OUTLOADS COMPETITION AGAIN!

Last October, when another wheel unit was needed for Thomas M. Durkin and Sons Co.'s job near Mantua, New Jersey, a new Cat DW21-No. 470 Lowbowl Scraper was matched against a new "equally rated" scraper-unit. In this test, as in other on-the-job tests under actual working conditions, the Caterpillar unit definitely outproduced competition. As a result, the company purchased the DW21-No. 470—as well as a D9 pusher.

Here's *proof* again that Caterpillar's exclusive Lowbowl Scraper design pays off in bigger, faster loads. For completely documented test facts, including names and dates, see your Caterpillar Dealer. Judge for yourself how the DW21-No. 470 Lowbowl Scraper can step up your production and profits!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

Details of on-the-job comparison!

JOB DESCRIPTION: Thomas M. Durkin and Sons Co. has a project near Mantua, New Jersey, preparing building sites, constructing streets, etc., for a 1000-home development. The company needed another wheel unit for its spread to make possible full pusher efficiency. To get a direct comparison of production, a new Cat DW21-No. 470 Lowbowl Scraper and an "equally rated" new 2-wheel scraper-unit were pitted against each other on the job under identical conditions. Here's some basic data on the units:

	DW21-No. 470	Scraper-unit A
Rated capacity, struck	18 cu. yd.	18 cu. yd.
heaped	25 cu. yd.	24 cu. yd.
Net weight	57,320 lb.	68,400 lb.
Engine horsepower rating	300	300
Scraper operation	Cable	Hydraulic

A Caterpillar D9 torque-converter Tractor and "Tractor A" were demonstrated as pushers, the D9 push-loading the DW21-No. 470 and "Tractor A" push-loading Scraper-unit A.

CONDITIONS: *Material*—sand with some clay; density 2700 lb./cu. yd., very low swell. *Loading*—level cut, sand loose but not completely "dead." *Average haul distance*—2000 feet. *Average return distance*—2250 feet. *Haul grades*—200 feet, 4% average upgrade; 500 feet, negligible grade; 1300 feet, 3% average downgrade. *Travel road*—fair; packed sand.

TIME STUDY DATA:

	DW21-No. 470	Scraper-unit A
Average loading time, min.	.59	.63
Average haul, dump, return time, min.	3.88	4.35
Total no-delay cycle time	4.47	4.98
Waits and delays, averaged between units to facilitate comparison	.30	.30
Total cycle time, min.	4.77	5.28
Average load, bank cu. yd.	18	16.5
Trips per hour	12.6	11.3
Production, bank cu. yd./hour	**227**	**187**

REMARKS: The excellent loading characteristics of the Lowbowl Scraper, plus its fast pumping cable operation, gave the No. 470 a clean-cut advantage over hydraulically operated Scraper-unit A. The DW21, with its efficient power train, made more than one extra trip an hour on the 4250-foot haul and return. Though grades were light, they slowed down Scraper-unit A, while the DW21-No. 470 took them in stride. Result: the DW21-No. 470 handled an average of 1.5 more bank cu. yd. a trip than Scraper-unit A—or the equivalent of 400 more a 10-hour day!

The new two-wheel Cat DW21-No. 470 Lowbowl Scraper

A new four-wheel DW20-No. 456 Lowbowl Scraper is also available. Both units feature the new Turbocharged 6-cylinder Caterpillar Engine which delivers 300 HP at 1800 RPM and 10% more rimpull. New Lowbowl design loads more material with less resistance clear to the end of the loading cycle. All these and other new features add up to bigger, faster loads for you with Cat Lowbowl Scrapers.

CATERPILLAR*

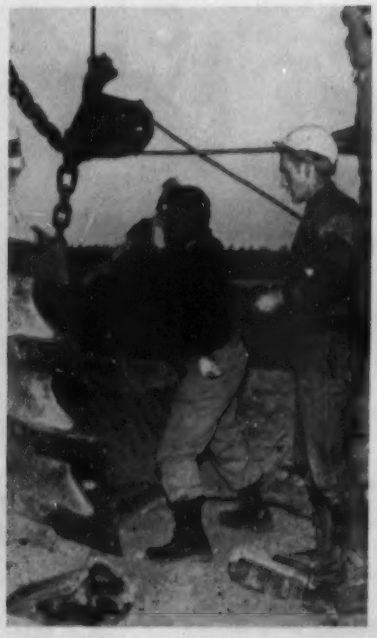
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BIGGER, FASTER LOADS WITH CAT LOWBOWL SCRAPERS

Long Sault Dam . . . Excavation proceeds, winter or no, on 6,000,000-yd cut through which the river will be diverted. Mayhew rotaries on International trucks drill blast holes in the hard and frozen ground.

St. Lawrence Is Year-Round Job

FALL • Diversion cut is dug by Bucyrus-Erie 120-B electric shovel that loads 25-yd Euclid wagon. Seepage makes footing slick.



WINTER • Walking draglines are brought in to help shovels on diversion cut. Ground is so tough it eats up a set of teeth daily.

WINTER IS RUGGED in the upper St. Lawrence River country. But so are U. S. contractors on the Seaway and Power Projects there; most of them worked throughout the long, frigid season to meet tight schedules and prepare for large-scale operations this summer.

Some work went on practically unchanged from warmer weather, such as Badgett Mine Stripping Co.'s canal excavation with a 14-yd walking dragline that moves 600 yd per hr. Some job conditions were improved, as when frost firmed up sloppy haul roads. But with temperatures of 25 deg below zero, working efficiency could not fail to drop, nor cost rise.

As shown here, some contractors shifted operations; others bulled it through. Walsh-Perini-Morrison-Kiewit-Utah gave up concreting on one dam and concentrated on excavation and form building. Yet the same firms kept right on grouting at another dam. And contractors for a third dam poured concrete throughout the winter.

(Continued on page 88)

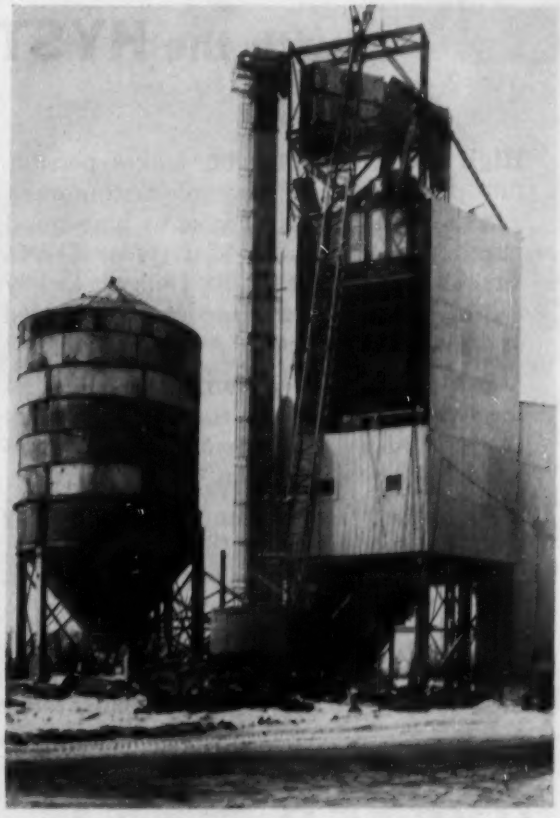
Barnhart Power House...

WINTER • Rock is line drilled from quarry-bar mounting for powerhouse foundation. Fire in drum (rear) stops air line freezing.

WINTER • Wagon-mounted diamond drills sink holes for grout curtain. Grouting has already used some 160,000 sacks of cement.

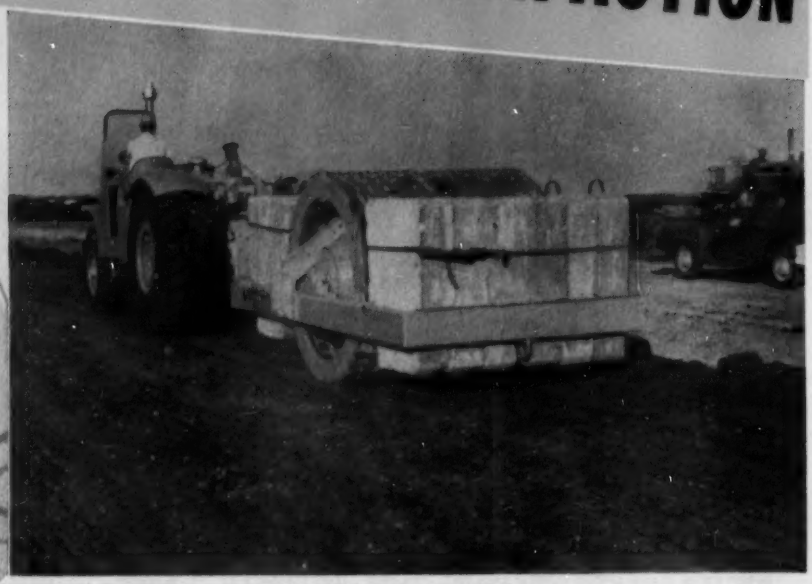
FALL • Grouting at abutment calls for battery of drills which go through as much as 90 ft of overburden and 50 ft into rock.

FALL • Much dirt from powerhouse excavation is a good glacial till. Here it is raked, rolled, and spread by HD-21's for dike.



WINTER • Concrete plant (a Johnson unit with four 2-yd mixers) is erected. Koehring 605 crane sets re-screening unit atop it.

Now this is HIGH SPEED COMPACTION



Over 1000 Cu. Yds. Compacted per hour with the HYSTER "GRID" ROLLER

High speed compaction makes possible full productive capacity of earthmovers, and keeps costs down. Towed by high-speed prime movers like the Caterpillar DW15 Tractor, the Hyster Grid® Roller is ideally suited to work with modern high-speed earth-moving equipment.

Example; On a section 500 feet long, 24 feet wide (8 inch lifts) the "Grid" Roller, towed at an average rate of 11 MPH, compacted 300 cubic yards in 16 minutes.

Example; On a section 1200 feet long, 12 feet wide (8 inch lifts) the "Grid" Roller, towed at an average speed of 11 MPH, compacted 350 cubic yards in 23 minutes.

These important compaction **results** can mean **more profit for you!** But your profits don't stop here. The Hyster "Grid" Roller is as efficient for rock crushing and bituminous road salvaging as it is for compaction.

As a rock crusher, the "Grid" Roller speeds secondary road building by crushing pit-run material right on the sub-grade for surface or base courses.

As a bituminous salvaging tool, the "Grid" Roller (1) disintegrates and reclaims old mat material (2) compacts the base (3) rolls the new surface . . . thus saving up to 50% in time and material. Be sure to see the Hyster Job Reports on "Grid" Roller applications.

For full details, call your Caterpillar Tractor Co. Dealer
He is also your Hyster Dealer

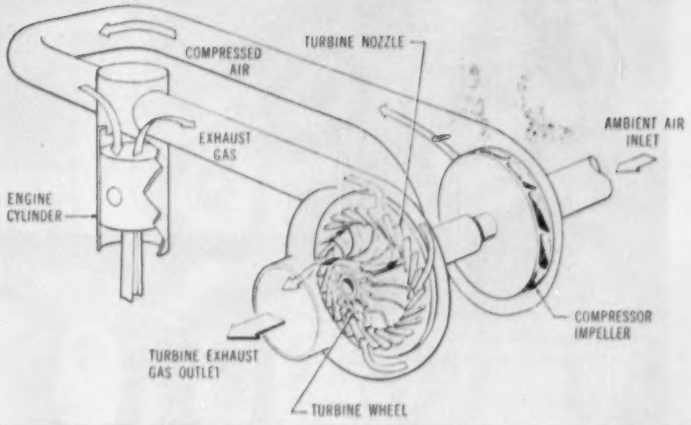
HYSTER COMPANY

2921 N.E. Clackamas Street, Portland 8, Oregon,
1821 N. Adams Street, Peoria 1, Illinois,
Hyster N. V., Nijmegen, The Netherlands.

Caterpillar announces a TURBOCHARGED

D397 (SERIES D) 650 HP Maximum @ 1300 RPM AND D375 (SERIES D) 430 HP Maximum @ 1300 RPM

Compact, modern heavy-duty diesels for greater power, efficiency and economy!



The Cat D397 Turbocharged Engine

Both the D397 and the D375 are also available as *roots blown, naturally aspirated or spark ignited engines.*

The Turbocharger . . . Exhaust Gas and Air Flow

Another example of Caterpillar leadership in action! The Turbocharger, driven by the engine exhaust, utilizes energy which would otherwise be lost. It packs air into the engine according to engine load for greater efficiency.

As shown in the diagram above, engine exhaust gases turn the turbine, which drives the compressor . . . the compressed air then enters the cylinders. Final result: more power on less fuel.

More than eighteen years of research have gone into these two new CAT* Turbocharged Diesels. Incorporating metallurgical, mechanical and aerodynamic advances, they are engineered to deliver higher horsepowers and lower operating costs at reduced noise levels. Their advance-design features are also available in D397 and D375 Electric Sets and Marine Engines.

With these engines in the Caterpillar line-up, you now have an even wider choice of compact, modern heavy-duty power to meet your requirements. Get the complete facts about these two new Turbocharged Diesels from your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN HEAVY-DUTY DIESELS

"They've passed 150,000 rough, tough miles—

Hauling Contractor H. L. Harvell reports on his GMC *Diesel dumps—hauling a million tons of crushed rock on Florida Flood Control project*

THE bidding was sharp when Hanford Harvell figured on the huge Central and South Florida Flood Control job two years ago. For he was not only competing against other truckers—but traditionally low-priced haulers of bulk materials.

"I couldn't have submitted the figures I did—if I hadn't had plenty of confidence in my GMC's," Harvell says. "But I'd had plenty of experience with their low costs—and sure-fire dependability —on many a tough job. And the new GMC Diesels are doing even better than I expected.

"Take just their maintenance savings. Some of my trucks have put in better than 150,000 miles—and nary an overhaul yet. My newest GMC has clocked 29,000 miles in the past 90 days. And I've had no down-time at all.

"Fuel savings are just as good. In fact, I'm getting 7 miles to the gallon. And that's on heavy hauls

(Advertisement)

Hustling 17 tons of crushed stone at a clip, this brawny Diesel tandem supplies foundation material for pumping stations along the canal. This model—rated at 46,000 GVW—is from GMC's new Blue Chip heavy-duty line blanketing the hauling range all the way up to 59,000 GVW-90,000 GCW. *Extra-stamina engineered* from rims to roof, these GMC's now offer full-length channel frame reinforcements as a factory-installed option—when required for exceptionally severe service.

"I never hesitate to recommend GMC's to other haulers," declares Hauling Contractor Hanford Harwell. "In fact, the way my rigs stand up to any job has probably influenced the buying of about 175 other GMC's in this area alone. It's a GMC for me—every time!"

and still no overhauls!"

that average 300 to 500 miles every day."

Harwell's experience unusual? Not among hauling contractors using GMC's brawny new construction haulers. They've found that new Blue Chip GMC tandems—gasoline or Diesel—handle bigger jobs at lower cost than anything else around. *Yet their price tags are below those on competitive equipment.*

Now is the time to talk over your needs with your GMC dealer!

GMC TRUCK & COACH
A General Motors Division

Power to move big loads—fast—comes from the GMC's new 4-71 Diesel engine. It's one of the great new Blue Chip line of power plants—offering a choice of six cylinder or V8 gasoline engines—four or six cylinder Diesels. All of them give you power aplenty to move top-capacity loads on fast-moving, tightly scheduled jobs—even through tough off-the-road conditions to the job-site. And that's where the driver also appreciates Safety Power Steering—standard on some models; optional at extra cost on others.

ST. LAWRENCE . . .
Continued from page 83

Barnhart Bridge . . .

For access to Barnhart Island Power Plant, $5 million cantilever structure spans Long Sault Rapids. It carries both rail and highway traffic.

FALL • Mt. Vernon Bridge Co. pushes superstructure from bank as A. S. Wikstrom, Inc., completes near pier's icebreaker.

WINTER • Bridge deck paving goes ahead with heated concrete from transit-mix trucks delivered to forms by Gar-Bro Power Cart.

BELOW • Bridge paving is protected from freezing by covering it with two layers of Flintkote, plus hay and tarpaulins.

(Continued on page 91)

The U. S. work is concentrated in the International Rapids section between Ogdensburg, N. Y., and Cornwall, Ont. Here the St. Lawrence Seaway Development Corp. is building two navigation locks and a canal with the Corps of Engineers supervising construction. The Power Authority of the State of New York is building half of the international Barnhart Island Dam and Power Plant, two control dams, and an intake dam, along with associated dikes, channel improvements, and relocations. Consultants Uhl, Hall & Rich are supervising this work.

Beat Warm Weather's Perspiration Hazards BOTH WAYS—with these M-S-A items

Absorb the sweat . . .

M-S-A PERSORB SWEAT BAND

Perspiration causes lots more problems than just worker discomfort. Burning sweat-filled eyes, streaked glasses and goggles, and distraction are all build-ups to potential accidents. There's an economical, practical answer to the problem. M-S-A Persorb Sweat Bands.

This product is made of highly absorbent cellulose sponge, with an elastic band to hold it comfortably in place on the wearer's forehead. Perspiration is absorbed as quickly as it forms, keeping face and eyes relatively dry. This evaporation has a bonus value, too. It cools the worker, helps him keep wide-awake, alert. If the sponge gets too moist, a quick wring-out puts it back on the job. Keeping Persorb bands clean is simply a matter of rinsing out in soapy water. They are light, soft, flexible, will not interfere with glasses. Persorb, moistened in cool water before putting on, gives extra comfort in hottest temperatures. Write for details.

Replace the salt

THROW-AWAY UNIT

PERMANENT UNIT

M-S-A SALT TABLETS AND DISPENSERS

This complete line of dispensers and salt tablets is the economical answer to a vital need—replacing body salt lost through perspiration.

The 1-4-U Throw-away Dispenser—Practical, economical. Bracket permits mounting in any location. When dispenser is empty, throw away, and replace. No cleaning, no re-filling, no sanitary problems. Cartons factory-sealed, tamper proof. Dispenses one tablet at a time. Two sizes—500 and 1000 tablet capacity.

The Plastic Model Salt Tablet Dispenser—Capacity of 750 tablets. Can be locked in position to prevent tampering. Sturdily constructed with a translucent upper half permitting a visual check of supply. Case is dust and moisture proof. Easy to refill. One-hand operation delivers single tablet.

Four types of tablets—Impregnated (for slow dissolving); plain salt (sodium chloride); enteric-coated (for delayed dissolving); combination salt and dextrose (for extra energy). Write for details.

and for protection in the field . . .

M-S-A PLASTIC SNAKE BITE KIT

Contains self-suction pump for venom removal, and all necessary material for emergency treatment. Write for details.

TICKS-OFF

A 6-second spray protects against ticks, chiggers, mosquitos, etc. for hours. Non-toxic—safe around food. Write for details.

FOILLE AEROSOL SPRAY

Instant relief of burns, sunburn, lacerations, wounds. Reduces chances of infection; shortens healing time. Write for details.

MSA
SAFETY EQUIPMENT HEADQUARTERS

Call the M-S-A man on your every safety problem . . . his job is to help you

MINE SAFETY APPLIANCES COMPANY

201 North Braddock Avenue, Pittsburgh 8, Pa.

At Your Service: 76 Branch Offices in the United States

MINE SAFETY APPLIANCES CO. OF CANADA, LTD.

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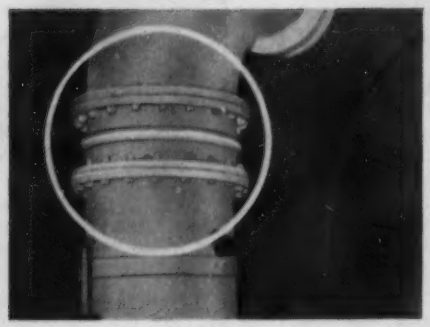
How long can a U. S. Rubber Expansion Joint last



...some have been on the job since 1926, the year they were invented!

Here are just a few reasons why *these flexible connections are used in pressure or vacuum pipe lines...*

- U. S. Rubber Expansion Joints are resilient and, therefore, do not, like metal, set permanently when compressed.
- Constant flexing merely keeps "U. S." joints "alive"...prevents them from becoming brittle.
- They absorb both axial *and* lateral deflection far more than metal joints. Greater insulation against vibration and pump noises is provided.
- There is never any electrolysis, corrosion or erosion.
- U. S. Rubber joints handle pressures from 40 lbs. to 125 lbs. Compare!
- The outside diameter of the arch is smaller than that on metal joints. Face-to-face dimensions (even with multiple arches) are smaller.
- Weight is much less. This, plus the fact that no gasket is needed between flanges (unlike metal joints) results in a more easy installation, lowering the cost.

"U. S." was the first to develop rubber expansion joints. They are at work in every kind of industry, prolonging the life of equipment in pressure or vacuum pipe systems. Obtainable at any of the 28 "U. S." District Sales Offices, or write us at Rockefeller Center, New York 20, N. Y.

US RUBBER

Mechanical Goods Division

United States Rubber

ST. LAWRENCE...
Continued from page 88

Long Sault Dam...

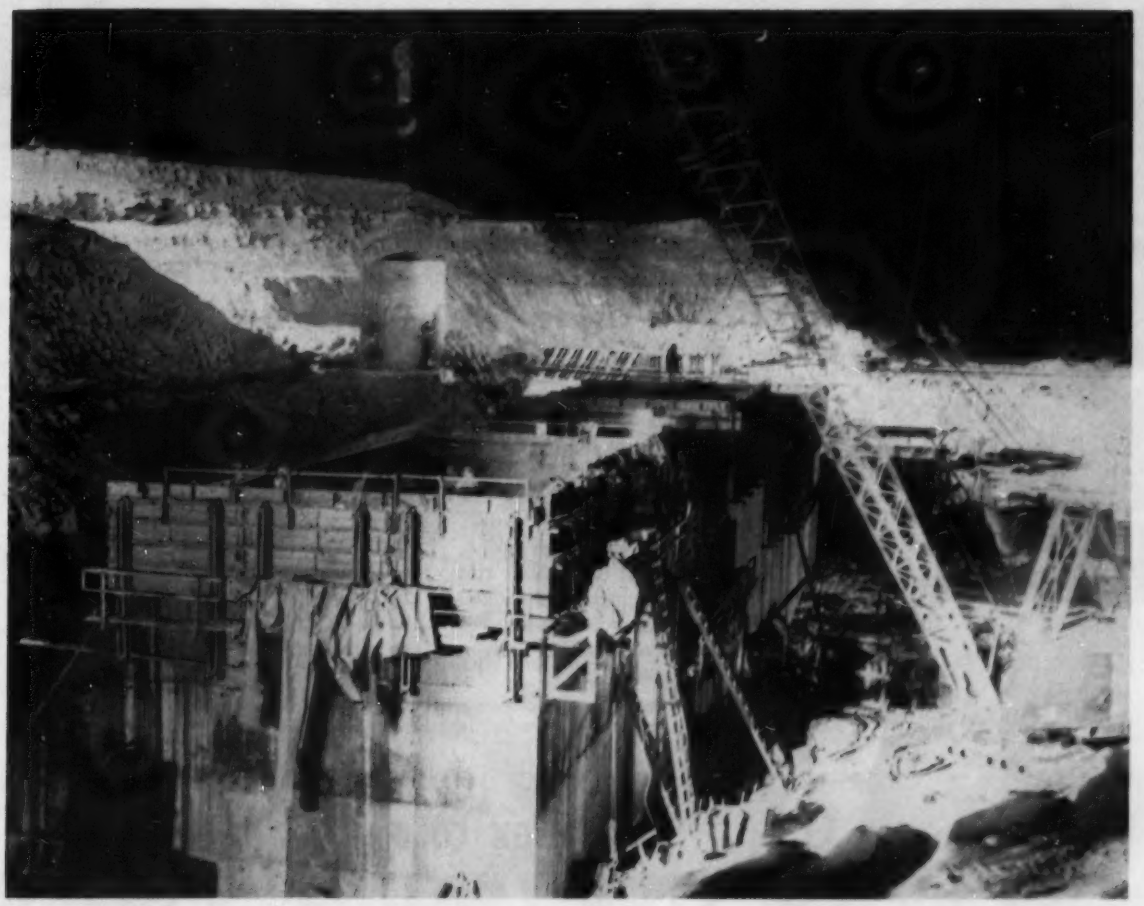
Second in size only to Barnhart Island Power Plant, 1,790-ft concrete control structure calls for two-stage cofferdamming. River diversion will be tough.

FALL • Foundation excavation proceeds inside first-stage cofferdam. Wagon and track-mounted drills sink blast holes for loading with Hercules powder. Two 2-yd shovels will load out blasted rock into trucks.

WINTER • Rock is dumped by Euclid truck as Cat dozer waits to spread it to strengthen canal bank in preparation for river diversion which will dry up this stretch.

BELOW • Pour for dam retaining wall extends into the snowy night. Contractor suspended concreting operations during worst winter months used time to build forms.

(Continued on page 95)



CUT WEEKS OFF PAVING SCHEDULES

BLAW-KNOX BASE PAVERS spread up to 400 TONS per hour!

Steady, high capacity, extreme accuracy of grade and non-segregation of materials will literally cut weeks off schedules of big paving jobs. Large, low hopper allows even the largest tandem dump truck to back up and dump its load with minimum delay. Oscillating V-type screed assures "straightedge" leveling of large stone, slag, gravel, soil cement or crusher run aggregate to rigid specifications *without segregation*. Oscillating action tends to knit adjacent courses eliminating uneven joints and the need for hand leveling. It will spread base material in widths up to 16 feet and to depths up to 20 inches and is easily adjusted for crown or super-elevated curves. The wide 21-inch tracks provide ample traction for pushing loaded trucks on soft subgrade without disturbing base material. High production and low operating costs of the Model P-150 keep every paving job on schedule and in the profit column. For complete details see your Blaw-Knox distributor.

BLAW-KNOX

BLAW-KNOX COMPANY • Mattoon, Illinois

38 Charleston Avenue • Construction Equipment Division

Cable Address: Blaw-Knox, N. Y.

"Outstanding Performance in the most Gruelling Service"
Arnold Pflugrad, Asst. Mgr. Harris Pine Mills Corp., Pendleton, Ore.
L. A. Stephens, Superintendent of Maintenance, Harris Pine Mills Corp.

Harris Pine Mills Chooses Phillips 66 HDS Motor Oil

In the logging and timber industry, heavy duty equipment must meet the most severe operating conditions. Seasonal demands vary from sub-zero cold and drifted snow to highest temperatures and tinder-dry forests.

Harris Pine Mills, world's largest producers of unfinished pine furniture, well know the need for an effective preventive maintenance program to keep their equipment functioning efficiently. Says Mr. Arnold Pflugrad, Assistant Manager: "We need an oil highly resistant to oxidation and bearing corrosion, as well as an oil that will keep our engines free of deposits. So Phillips *66* HDS Motor Oil was chosen as the lubricant in all of our mobile equipment."

Mr. L. A. Stephens, Superintendent of Maintenance, reports that all engines are running exceptionally clean and free of deposits, and he credits this to the very high detergent-dispersant characteristics of Phillips *66* HDS Motor Oil. Says Mr. Stephens: "Ring sticking and valve problems have been eliminated; engine wear has been minimized, allowing much longer periods of useful operation before engines are serviced. After using Phillips HDS Motor Oil in our equipment, I would not hesitate to recommend its use for the most heavy duty type of engine operations."

Phillips 66 Heavy Duty Motor Oils offer you many advantages, on all kinds of jobs, in all kinds of equipment. You can benefit. Call, write or wire today: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma. A Phillips lubrication sales engineer will give you complete details.

It's Performance That Counts!

PHILLIPS 66 HEAVY DUTY MOTOR OILS

Black & Decker® HEAVY-DUTY SAWS ARE POWER-BUILT to last!

We don't buy motors—we build them!

The *heart* of your electric tool is the motor—completely built by Black & Decker. All the power you need and then some . . . because each motor is built for a specific tool and the job it must do. B&D motors always *stand up!*

NEW 6½" Saw races through 2x4's . . . even at a 45° angle

Black & Decker offers *the complete heavy-duty* saw line—with enough power and versatility for every professional need. This *new* B&D 6½" Heavy-Duty Saw (shown above) makes all cuts in 2x10 and smaller lumber, even at a 45° angle with *blade to spare!* And all B&D Saws—6", 6½", 7", 8" and 9" models—handle practically any building material: ferrous and non-ferrous metals, corrugated sheets, ceramics, tile, slate, Transite.

Latest safety features, latest *convenience* features—telescoping guard, larger lift-lever, instant-release trigger switch; calibrated quadrant, larger wing nuts, for faster, easier depth and bevel adjustments . . . clear-view operation . . . easier cutting from right or left side! Every B&D Saw is *Power-Built* for years of satisfactory, efficient service! See your B&D distributor or write: The Black & Decker Mfg. Co., Dept. 2604, Towson 4, Md.

SANDERS

HAMMERS

DRILLS

BENCH GRINDERS

SERVICE . . . one of 42 Black & Decker factory service branches is located "next door" to you. Staffed by experts to give you fast, efficient service, genuine replacement parts.

LOOK IN THE YELLOW PAGES UNDER "TOOLS-ELECTRIC"

Black & Decker®

PORTABLE ELECTRIC TOOLS

ST. LAWRENCE . . .
Continued from page 91

Grass River Lock...

Excavation for navigation structure goes down 80 ft to rock through sticky, soft marine clay. Side slopes are 1 on 13½; deep-well pumps help keep hole dry.

FALL • After being loaded by dragline, Movall wagon hitched to Cat DW21 dumps nearly 30 tons of gooey clay at spoil pile. Positive ejection keeps clay from sticking.

FALL • Helping hand is given Euclid rear dump by shovel which cleans stuck clay from body. Shovel's normal job is excavating dry glacial till at one end of lock. Dutcher Construction Corp. also moved a good deal of this material with Cat DW21 scrapers.

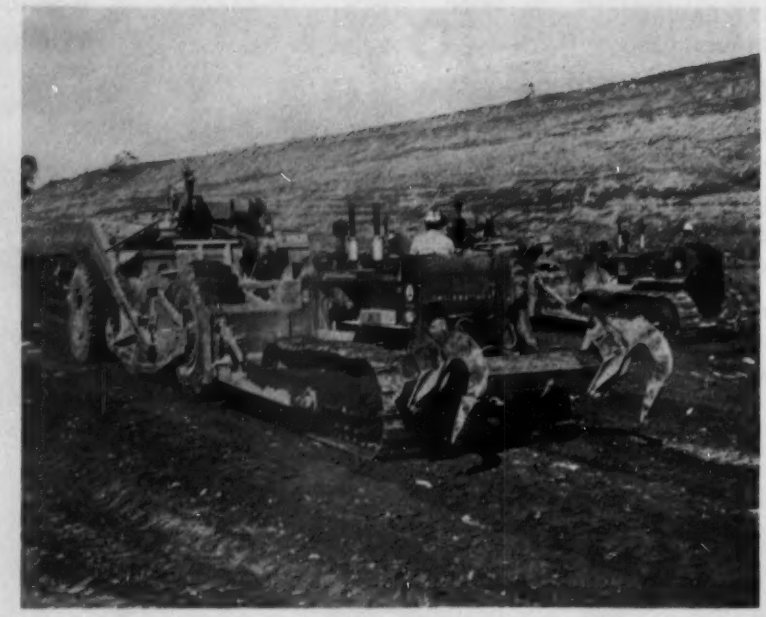
WINTER • Maintenance men take advantage of between-shift halt to repair flexible metal hose that conducts engine exhaust into Movall body to heat it. Winter was a help on this job because frozen roads were easier to haul over than wet and rubbery ones.

(Continued on page 96)

ST. LAWRENCE . . .
Continued from page 95

Robinson Bay Lock...

Second such structure in International Rapids section will incorporate tunnel to carry highway beneath canal.



FALL • Triple-duty TD-24 carries dozer blade and Ateco hydraulic ripper and serves as pusher for 8 Tournapull on Jack & Jim Maser, Inc., job. Material is tight glacial till that weighs 3,900 lb per yd and is so abrasive and boulder-filled that cutting edges have to be replaced weekly. Bid price of 34¢ per yd proved too low, and Tecon Corp. took over rest of excavation at 75¢ a yd.

WINTER • Near bottom of cut, Bucyrus-Erie 71-B and 54-B load Euclid trucks as HD-21 helps with cleanup. Till is blasted with 0.3-lb of Atlas 40% gelatin per yd. Rotary drills put down 18x18-ft hole pattern 10 to 15 ft deep, and frost-breaker hole 3 ft deep is dug between them by air spade. Blast is set off each shift at lunch hour.

WINTER • Frozen dirt builds up in truck bodies so this back-scratching Unit crane cleans it out. Contractor also sprays bodies inside with diesel oil to prevent sticking, has found that this measure increases payload by average of 3 yd per trip. In real rugged weather it is necessary to apply the oil as often as once an hour.

(Continued on page 98)

Check these profit-making features!

NEW! THOR POWER TROWEL

Does a better, safer job with less crew time!

- Light weight . . . completely portable
- Blade tilt for floating or finishing work adjustable by large wheel operated by hand or foot . . . no time-consuming blade changes
- Safest trowel on the market . . . *non-rotating* guard ring protects worker, permits work closer to walls
- Nationally serviced Briggs & Stratton 4-cycle engine
- Direct, vertical drive—no belts to wear, slip or replace
- Automatic clutch stops blades at idling speed
- Drive connection is at blade *center* . . . for best efficiency and balance
- 29" guard diameter permits access through standard doors, into basements, etc.
- ¾" tubular, one piece frame . . . extremely durable

For complete specifications, demonstration and price . . . contact your nearest Thor distributor or the Thor branch in the city nearest you shown below.

THOR POWER TOOL COMPANY, AURORA, ILL.

Atlanta	Cincinnati	Los Angeles	Pittsburgh
Birmingham	Cleveland	Milwaukee	St. Louis
Boston	Denver	Newark	San Francisco
Buffalo	Detroit	Long Island City, N.Y.	Seattle
Chicago	Houston	Philadelphia	Toronto, Canada

Export Division, New York City

Thor
PORTABLE POWER
TOOLS

ST. LAWRENCE . . .
Continued from page 96

Maintenance . . .

Despite abominable winter weather conditions for men, machines must be serviced more often and maintained more critically than in summer.

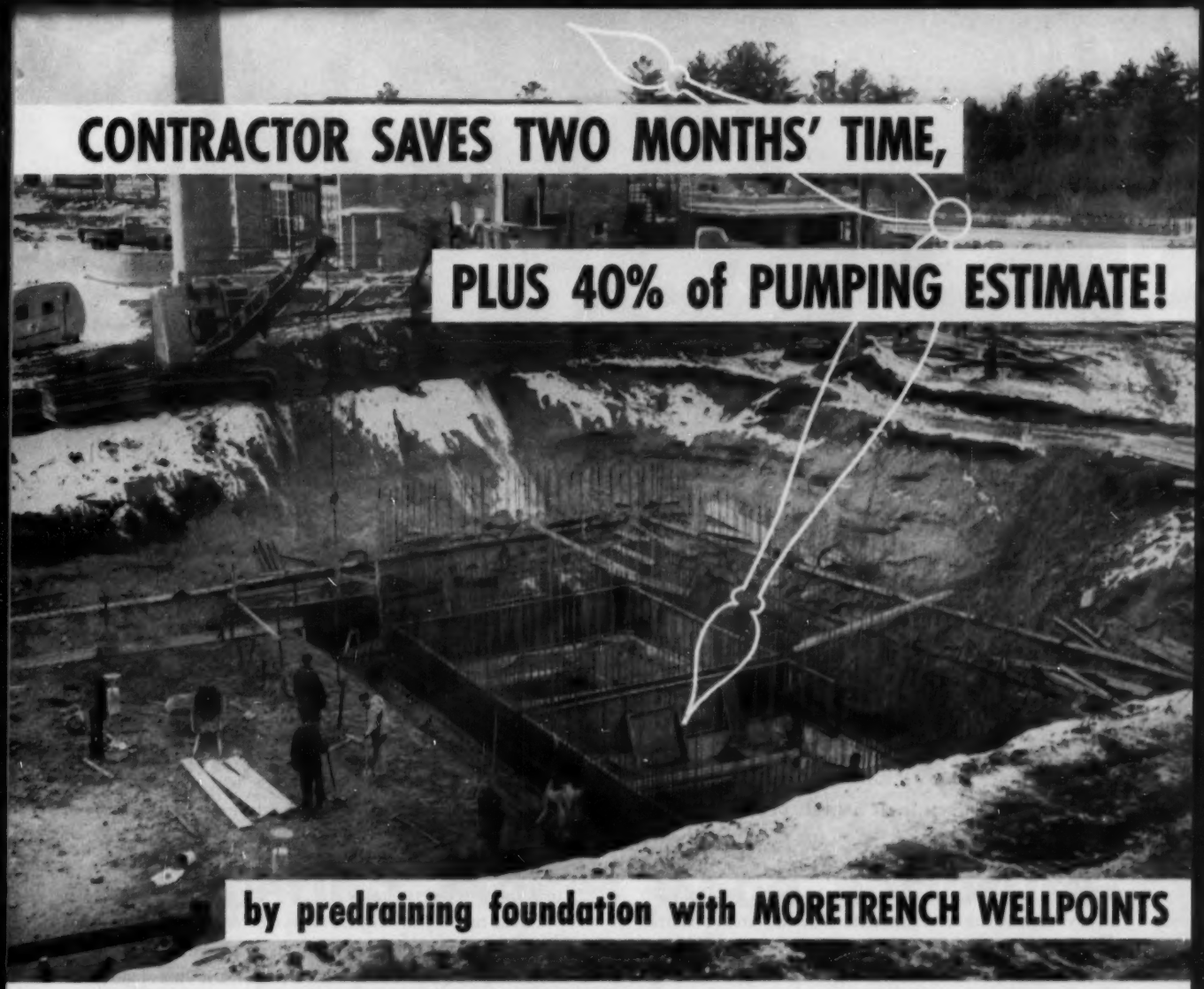
WINTER • Ice and frozen mud are steamed from Caterpillar bulldozer blade. Steam also will free frozen track rollers and carrier rollers. Steam generator or boiler is indispensable on winter-time projects.

WINTER • Hard frozen ground is especially tough on such things as cutting edges, bucket teeth, and lips. Here, protected by a flameproofed tarpaulin wind-break and warmed by a salamander, welder applies hardfacing material to dragline bucket.

Photos by PASNY and CM&E Staff

CONTRACTOR SAVES TWO MONTHS' TIME,

PLUS 40% of PUMPING ESTIMATE!



by predraining foundation with MORETRENCH WELLPOINTS

Sewage Treatment Plant, Merrill, Wis. — Contractor: Burger & Vicker, Inc., Wausau

Before ordering pumping equipment for this job, Burger & Vicker, Inc. tested two wellpoints—*in the ground*—Moretrench and another make of wellpoint which they had been using for several years.

The MORETRENCH Wellpoint pumped 25% *more* water than the other.

That did it! Moretrench got the order. Results were immediate—and perfect. 21′ of water disappeared fast.

Here's what the contractor says: "Our pumping estimate on this job was based on our former experience with wellpoints. Using Moretrench, we finished the job *two* months earlier than anticipated at 40% less cost!"

Exceptional? No! For a time and money saver on any wet job, you can't beat a MORETRENCH WELLPOINT SYSTEM. For full details on how to pump—at a profit—contact our nearest office.

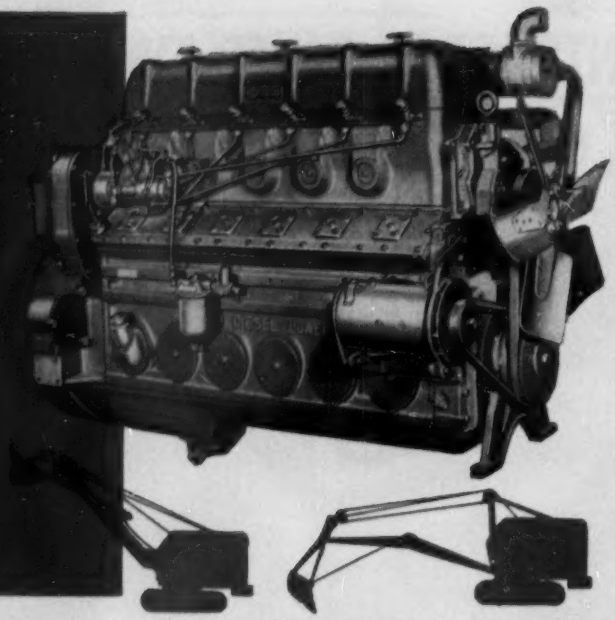
MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

for powering heavy duty excavators...



P&H diesels give you double value

1. Money Making Power...

For steady production at a high profit you can't beat the P&H Diesel 687-C18 for powering heavy duty excavators. It has the power, response and stamina to give you smooth, fast work cycles with every excavator attachment. You do more work, faster, at a lower cost.

A rugged, fast accelerating engine with a high torque, this 6-Cylinder P&H Diesel furnishes power to successfully handle the variable loads and momentary overloads encountered especially in shovel, dragline and trench-hoe services.

Costly down-time for restarts is held to a bare minimum. When heavy digging is encountered, the 2-Cycle P&H Diesel 687-C18 has the reserve power and punch to "pull through" without stuttering or stalling.

2. Money Saving Power...

Also, with a P&H Diesel you burn fewer gallons of low-cost fuel, you operate with less down-time for servicing and repairs, you experience longer periods between overhauls.

These money saving features of P&H Diesel power result from the extra reserve of power which is built into the P&H Engine 687-C18 for heavy duty excavator service. Reserve power minimizes engine stress and strain created by momentary overloads—adds to engine life—lowers maintenance costs—contributes to fuel economy.

P&H Diesel money making and money saving power add up to more power at lower operating cost for greater production and more profit for you.

It will pay you to investigate P&H Diesel's unique double values for the powering of your heavy duty excavators from 1½ to 2 yards in size.

P&H Diesel Engine Division
Harnischfeger Corporation
Crystal Lake, Illinois

Please send me complete information on P&H Diesel Engine 687-C18 for powering heavy duty excavators.

Name_____

Company_____

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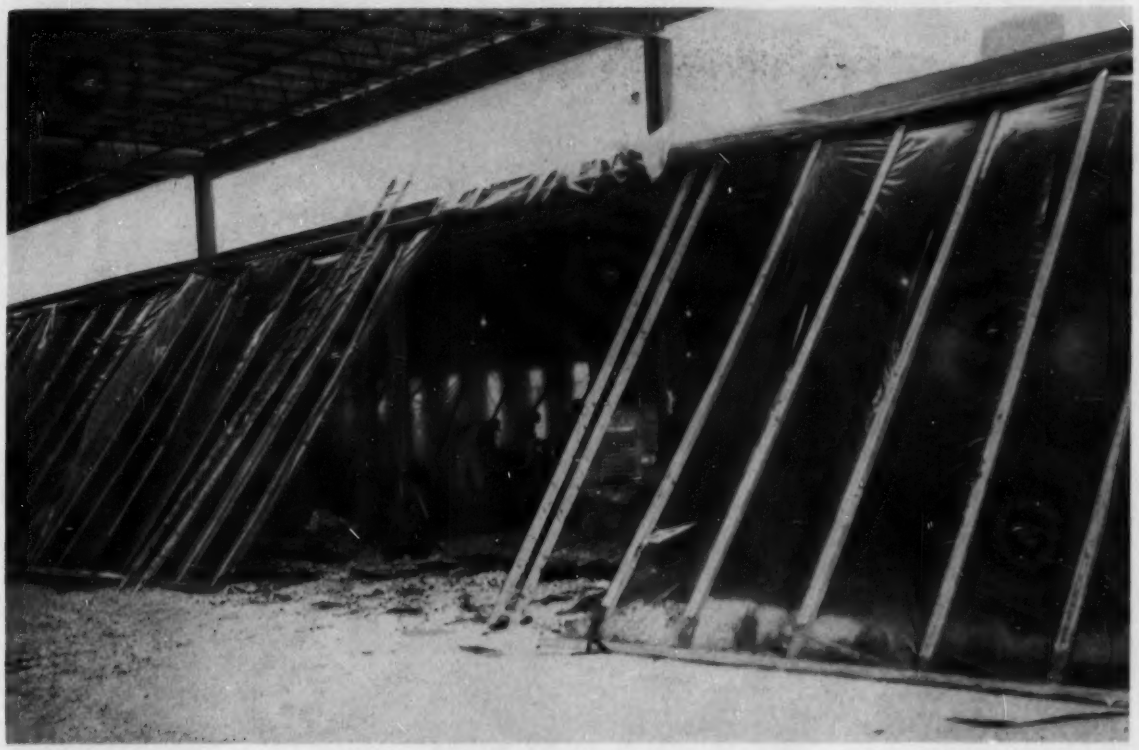
City_____ Zone____ State_____

For Modern Engineering, Look to

HARNISCHFEGER

P&H DIESEL ENGINE DIVISION
Crystal Lake, Illinois



OUTSIDE the enclosure it's easy to see how polyethylene sheeting is hung directly from girders and draped over struts to provide working space around the slab. One section is rolled up to allow the entrance of a ready-mix concrete truck.

Sheeting Makes Good Enclosure

PLASTIC SHEETING makes a light, easy-to-handle enclosure for winter concrete work. And, because it is translucent, lighting inside the enclosure is no problem.

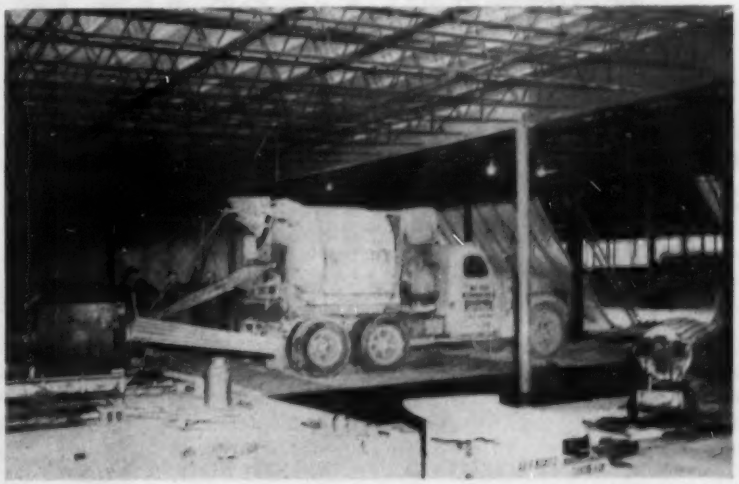
Russell Allen General Contracting Co., Quincy, Ill., uses 200,000 sq ft of Visqueen polyethylene sheeting to enclose areas of the $1.5 million Motorola plant at Quincy. Inside the enclosure Allen is pouring 185,000 sq ft of floor slabs.

The pour is made in sections roughly 20x20 ft, heated by Silent-Glow forced circulation heaters supplemented by salamanders and fans. The sheeting hangs directly from girders and is draped over 2x2-in. struts to provide working space around the slab. When the pour is completed, the struts are removed and the sheeting is fastened tight against the slab.

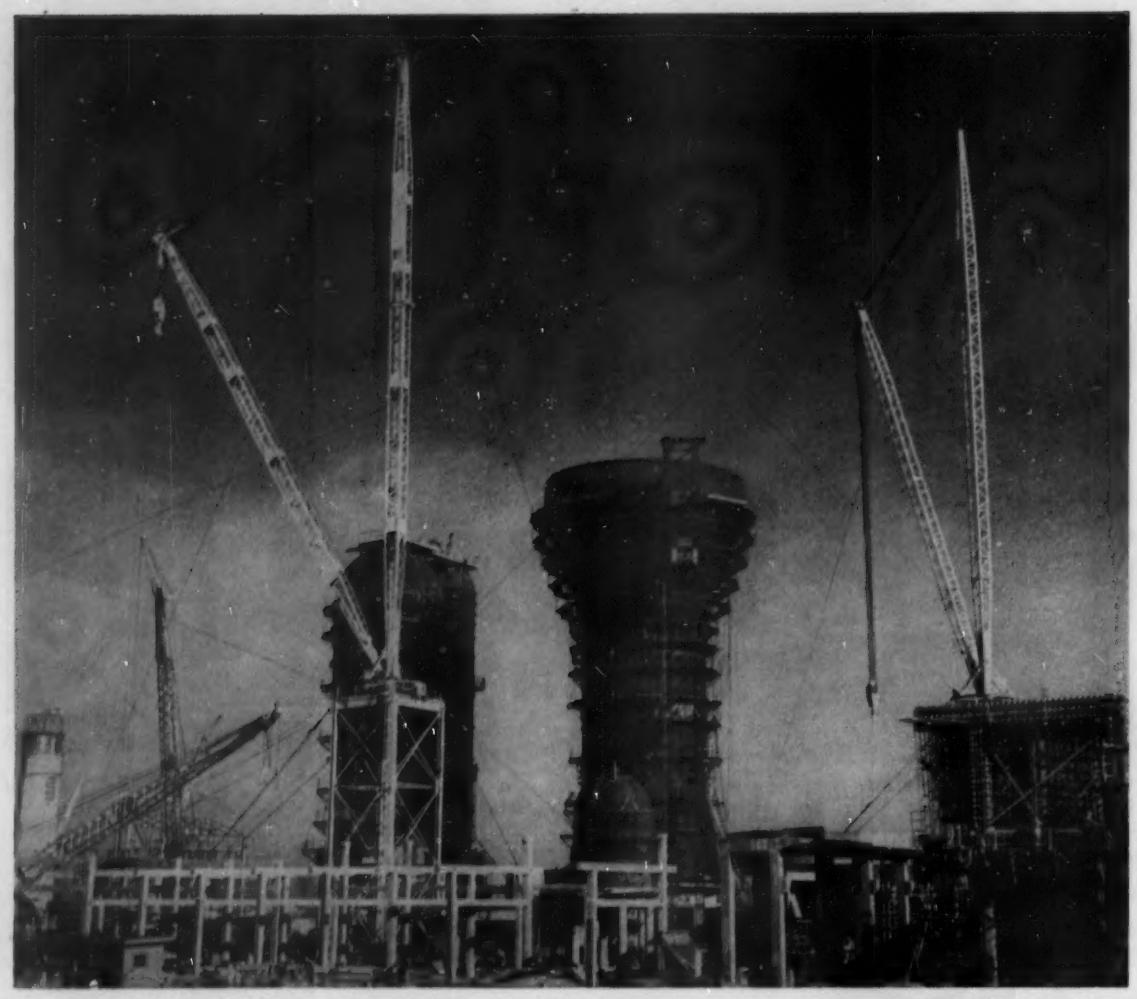
Visqueen comes in sheets as much as 32 ft wide, and it weighs only 20 lb per 1,000 sq ft. Its light weight makes it easy to roll up like an awning to allow the entrance of ready-mix trucks. Then it can be lowered quickly to prevent excessive heat loss.

Visqueen also is used as a moisture barrier in concrete slabs. No joint sealing is needed; a 6-in. overlap does the job efficiently.

John Banya, architect of the building, conceived the idea of using Visqueen sheeting to form enclosures for winter concrete work.



INSIDE the enclosure a ready-mix truck discharges concrete in a temperature of about 60 deg. Silent-Glow heaters supplemented by salamanders maintain even temperature.



PAIR of American guy derricks 250 ft high handles erection of main cracker column. They are supported on 65-ft towers and have capacities of 200 tons. Tops of masts and towers are guyed to anchors. Job also has nearly 100 cranes of all sizes.

A special type of construction . . .

Refinery Goes Up in Big Lifts

REFINERY construction is unique. Each job is a maze of cranes and derricks. Structures range from simple pipe supports to towering cracker columns. There are a vast number of separate hoisting operations. Everything appears to be underway at the same time. And working area is cut to the bone.

C. F. Braun & Co. of Alhambra, Calif., is building one of the world's largest refineries for Tide Water Associated Oil Company near Wilmington, Del. When completed late this year the plant will process 130,000 barrels of oil a day. Schedule calls for completion in less than two years.

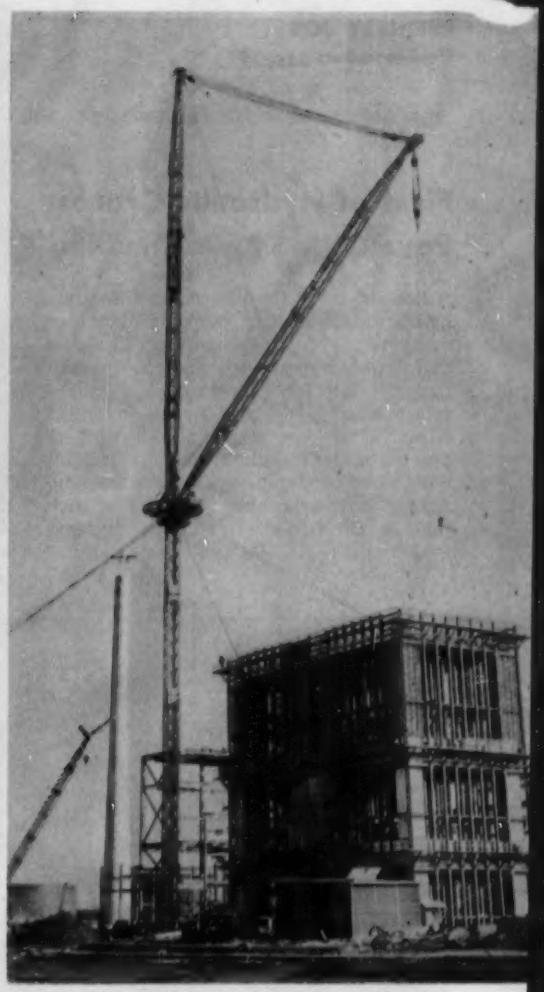
Besides the major processing units, the plant includes hundreds of secondary structures. There are huge tank farms, river piers, warehouses, and administrative centers. Miles of piping—both above and below ground—carry crude oil, finished products, water, drainage, and utilities. Chimneys tower hundreds of feet in the air.

There are so many jobs going on at the same time that it's a big problem to keep men and equipment out of each others way. The job is mechanized to the hilt, but it still takes about 6,000 men. To coordinate efforts, Braun's engineers make up detailed planning schedules for every area and operation. A scale model of the huge project helps them design derricks, pick the best locations, and spot anchors for guy wires.

Trickiest erection problems are on the big petroleum processing units. Most of them are the largest ever built. For the heavy lifts, Braun has available four stationary guy derricks and two portable gin poles.

All derricks have 200-ton capacities. The highest is 315 ft, including a 125-ft tower. Two derricks flanking the main cracker column are 250 ft high, including 65-ft towers.

200-TON HEAD of orthoflow fluid catalytic cracking unit converter tower is hoisted by pair of guy derricks. Hoist operators get signals through earphones.



DERRICK 315 ft high handles huge concrete structure. Steel frame shores forms for 800-yd slab pours.

Twin gin poles will be set up about 12 times and will lift a maximum load of 356 tons. Besides the derricks, there are fifteen 50- to 60-ton crawler cranes and sixty 25- to 30-ton crawler and truck cranes. A big fleet of small hydraulic cranes handles many light lifting jobs.

Besides structures, there are two other big phases of the job—dredging and earthmoving. Grading subcontractor George M. Brewster moved 65,000 yd per 10-hr day with four Euclid loaders, 42 bottom-dump wagons, and 23 scrapers. Three dredges are moving 12,000,000 yd of material from an adjacent river area for a channel, turning basin, and canal.

Paul Terry is project manager and Sweeney Tuck is superintendent for C. F. Braun & Co.

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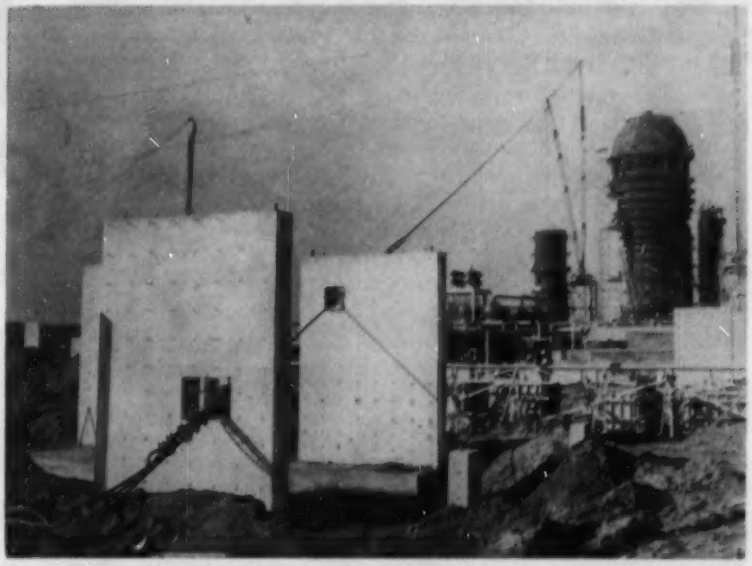


GUY WIRE for 250-ft high derrick runs through left-out sections of concrete walls. Jungle of guy wires crisscross job. Contractor made scale model to select best derrick locations.

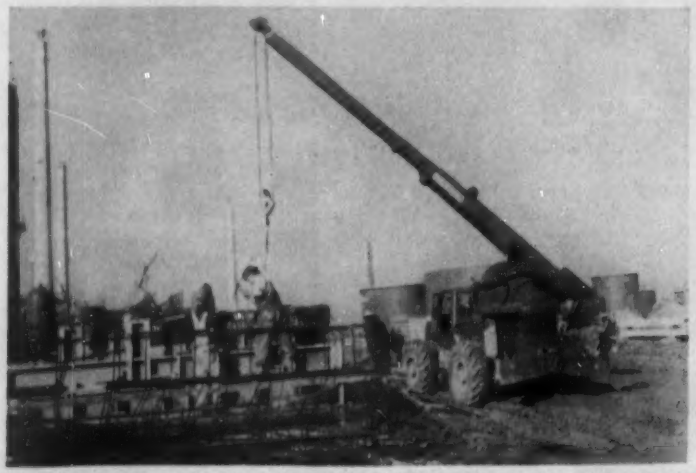
Continued from page 103

Fleet of Hydraulic Cranes Pays Off on Pipe Handling

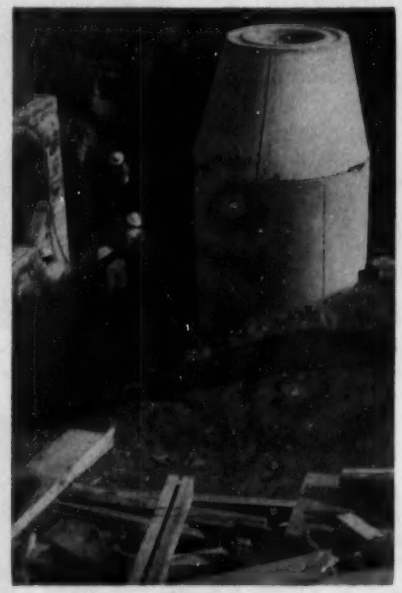
A fleet of more than 20 Austin-Western hydraulic cranes is proving its worth on many types of small handling. The one-man, rubber-tired rigs maneuver easily through the job handling pipe, forms, reinforcing cages, and numerous other items. They are especially useful on pipe work. Overhead pipe is quickly positioned for welders, eliminating temporary supports and reducing worker fatigue. The rigs are in constant demand.

ADJUSTABLE BOOM retracts to position itself for lowering reinforcing cage into forms for precast concrete pipe supports. Rig is one-man operated.

PRE-ASSEMBLED section of cast iron pipe is lowered intact by hydraulic crane. Braun saves time by joining up to six lengths in the yard instead of in the trench.



REINFORCING cage for foundation pedestal is lowered into place by hydraulic crane. Rig maneuvers through deep mud to carry cage from prefabrication yard.



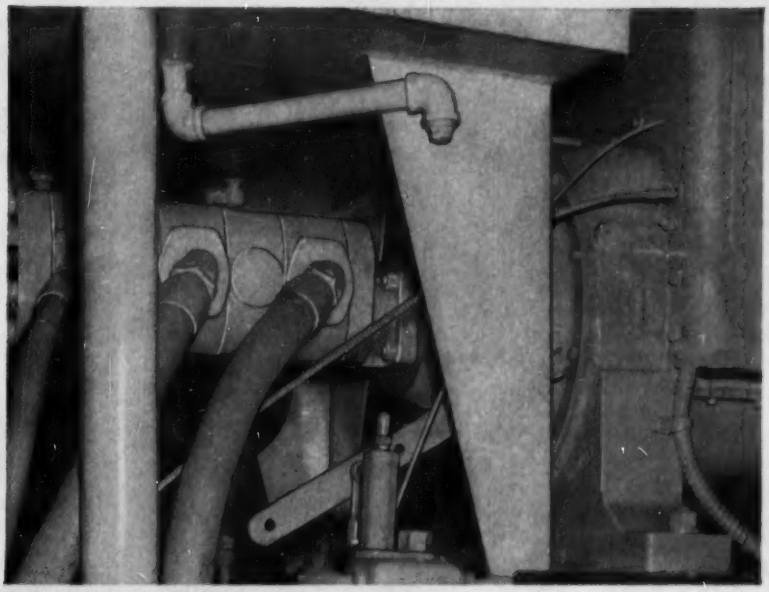
Precast Manholes Speed Sewer Work

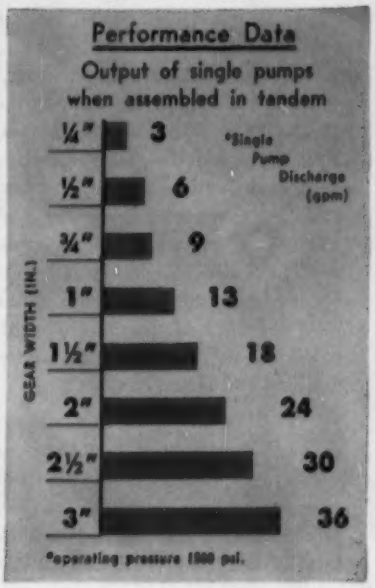
Concrete manholes precast at yard of Henry C. Eastburn & Son, Inc. are quickly installed at job site. They are made in both vertical and conical sections. Vertical lengths range from one to five ft and have 5-in. walls and a 4-ft dia. Structure at left is one of several drops built into main discharge line to dissipate tremendous energy developed in water during long fall to river. Structures create underground waterfalls 20 ft high.

(Continued on page 107)

FLUID POWER NEWS

THREE PUMPS— ONE POWER TAKE-OFF





COMPACT TANDEM MOUNTING driven thru one power take-off. Three power packed hydraulic circuits operate independently from the output of these three single pumps.

How complicated engineering problems are solved in designing hydraulically powered, multi-functional heavy duty equipment.

More manufacturers adopting tandem oil hydraulic pumps to turn out more work with less operator fatigue.

If you have problems in designing hydraulic circuiting into your hydraulic powered equipment because of its multi-functional operation, look how the "Commercial" tandem oil hydraulic pump will give you the necessary output to energize more than one cylinder or motor independently of each other at substantial savings in cost.

Independent control of snow plow blade and wings, earth mover boom and tool, conveyor and spinners of ice control spreaders, or tool operation on power steered mobile equipment are merely a few applications where these pumps deliver fluid power to every separate hydraulic circuit required for all these functions. Each operation is individually controlled, yet when speed change is needed for better intermittent tool operation, the combined output of two or more pumps can be easily obtained with simple valving. You do not have to over-power your entire circuit in order to satisfy an intermittent overload developed in any part.

TOUGH DIGGING in close quarters with this multi-purpose machine is only possible because of its finger-tip controlled hydraulic operation. KS-79

Two, three, or even as many as four pumps, assembled with parts common to single pumps, can be strung out behind one shaft—the whole assembly requiring only one mounting. How much more complicated it would be to mount individual single pumps, each requiring a separate power take-off, for every hydraulic operation. Think how much less space one tandem would occupy, and can't you readily visualize how simplified your piping and valving problems become.

Yes, if you have multiple hydraulic circuiting to design into your equipment, you will do well to further investigate the many advantages the "Commercial Tandem" has to offer. Our engineers, who have been through it many times before, will be available to help you. *The Commercial Shearing and Stamping Company, Youngstown, Ohio; Chicago, Illinois; Salt Lake City, Utah.*

COMMERCIAL
shearing and stamping

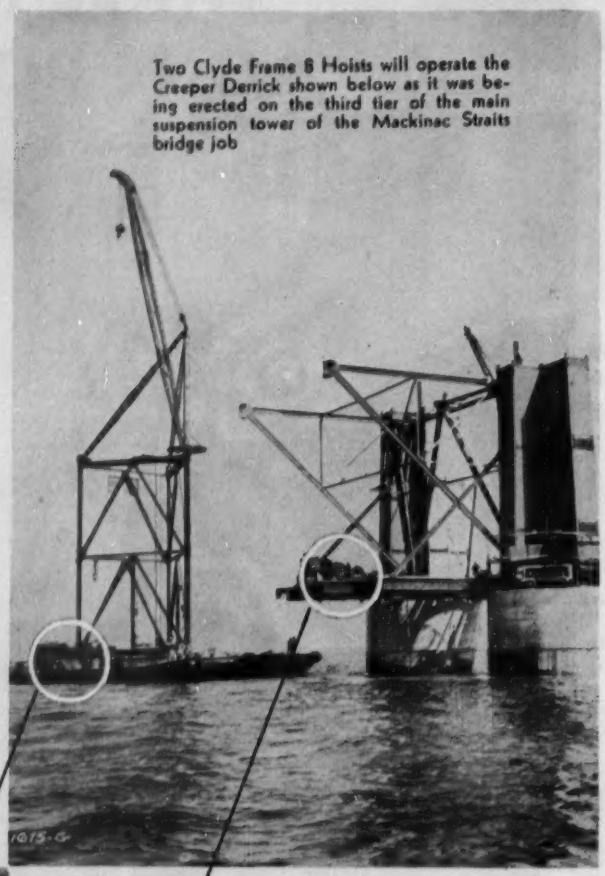
CLYDE "SAN FRANCISCO BAY BRIDGE" HOISTS TEAM
WITH NEW CLYDE STEEL ERECTORS' HOISTS

Spotting Steel on World's Largest Suspension Bridge

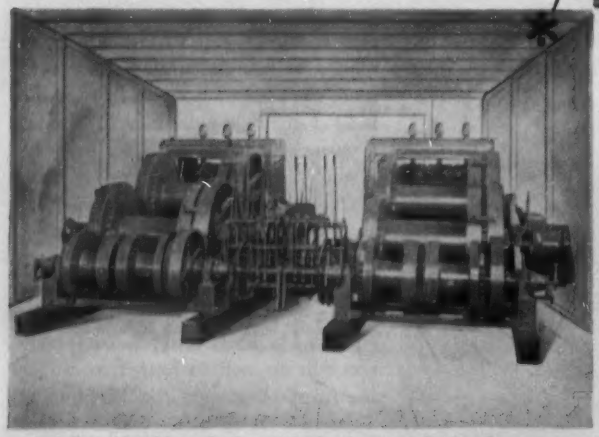
The twenty-four year old Clyde hoists operating the barge mounted derrick shown at right are proof of Clyde's sound engineering, quality construction and long-life dependability! Built in 1934 for The American Bridge Division, U. S. Steel Corp., for the San Francisco Bay Bridge job, these dependable units have been used almost continuously on a wide variety of applications . . . from one 'world's longest suspension bridge' to a new 'world's longest suspension bridge' now being constructed across the Mackinac Straits! Here's a record of an active, profitable life span of more than two decades under severe and exacting conditions!

The engineering and structural advantages of Clyde's complete line of hoists are long-life, quality-plus Clyde features. Their capacity to do a job profitably recommends Clyde for the consideration of the most critical and cost-wise buyer.

Clyde's advanced engineering principles assure long, continuous, economical, safe and easy operation.



Two Clyde Frame 8 Hoists will operate the Creeper Derrick shown below as it was being erected on the third tier of the main suspension tower of the Mackinac Straits bridge job

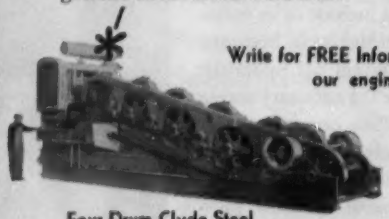


Clyde Twin Unit Hoists built in 1934 for American Bridge Company, used on San Francisco Bay Bridge . . . Now in use on Mackinac Straits Bridge.

Here is equipment built to shave critical dollars from competitive bids now and a quarter of a century away!

If your material handling requirements call for dependable equipment, it will pay you well to get the facts from CLYDE!

Write for FREE Information! The services of our engineering department are at your disposal.



Four Drum Clyde Steel Erectors' Hoist with Bull Wheel Swinger

HOISTS—DERRICKS—WHIRLEYS—BUILDERS TOWERS—CAR PULLERS—HANDI-CRANES—ROLLERS

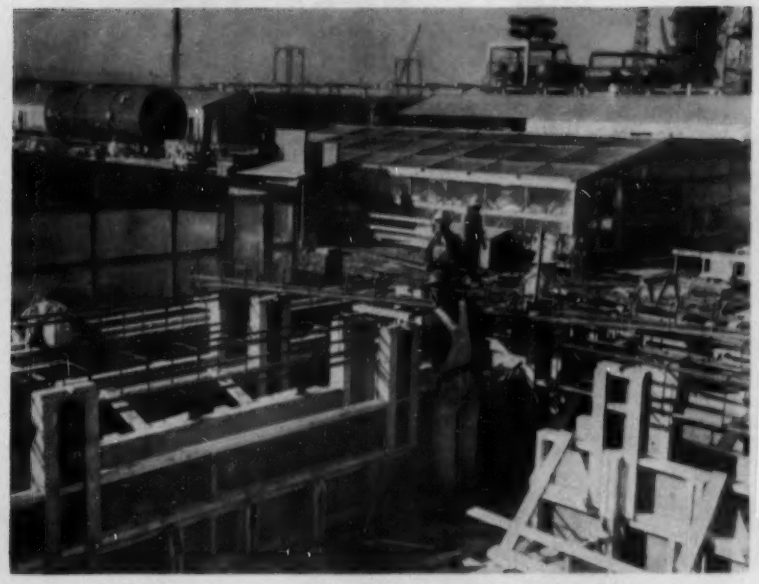
CLYDE IRON WORKS, INC.

Established in 1899

DULUTH 1, MINNESOTA

ONE OF THE 12 INTEGRATED COMPANIES BARIUM STEEL CORPORATION

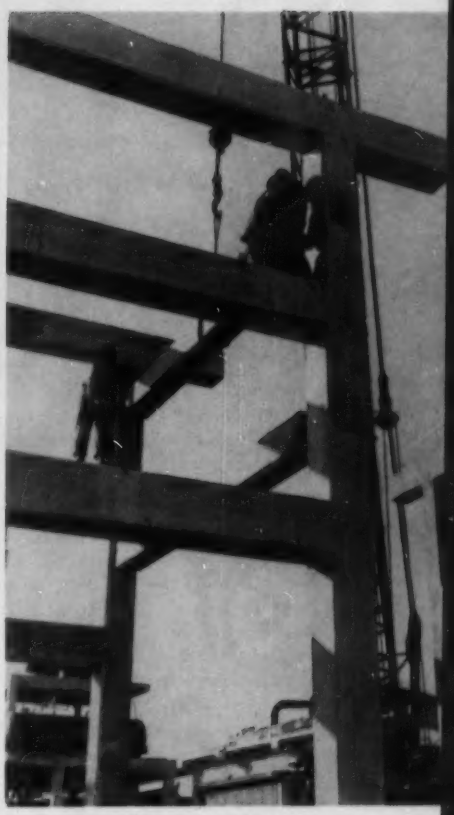
REFINERY JOB . . . Continued from page 104



STEEL reinforcing for pipe support is assembled on brackets directly above form and then lowered into place. Heated curing enclosures are covered with Visqueen film.

Precasting of Pipe Supports Cuts Form Costs

Big savings in form costs are achieved by precasting more than 500 pipe supports. They are poured in plywood-faced forms on casting tables set up near the points of erection. To save space and also multiply the use of forms, pipe supports are cast on top of each other, five high. Two days must elapse between successive pours. When cured, they are hoisted by crane, erected on pedestals, and tied to adjacent supports with precast struts.



PRECAST strut is positioned between pipe supports and welded to angles cast in place.

Fork Lift Trucks Stock Storage Yard

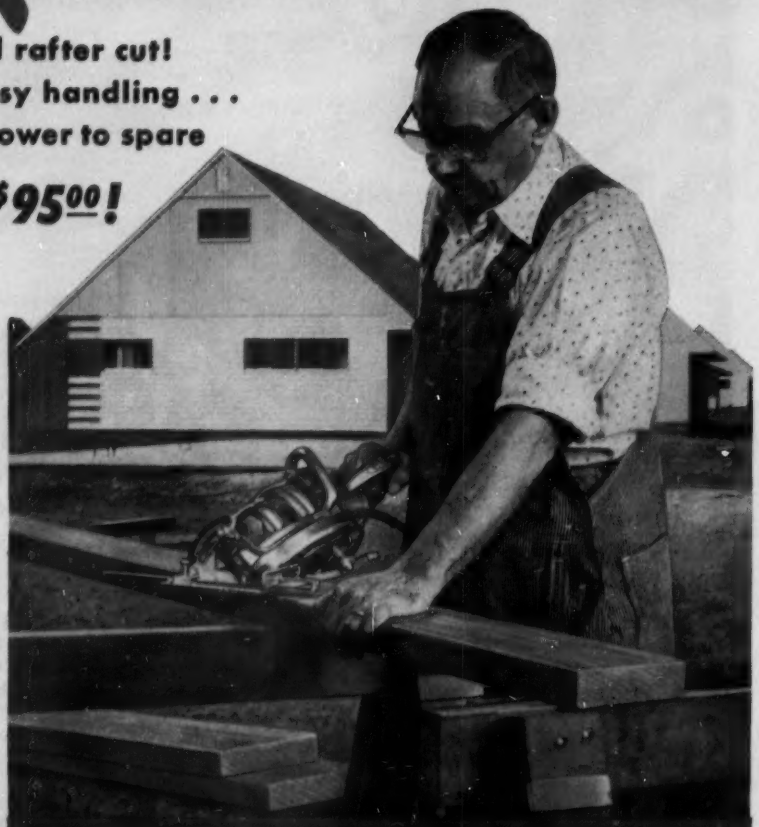
It takes thousands of items to equip a $130 million refinery. And the handling job is immense. Except for the large vessel sections, which are brought in on barges, all parts and supplies come in on trucks or railroad cars. They are unloaded by a fleet of 10 Clark fork-lift trucks and carried either to a huge stockpile area or to a warehouse. All items are handled on pallets.

(Continued on page 113)

NEW SKIL SUPER-DUTY 6½" SAW

makes every residential rafter cut!
New light weight for easy handling . . .
high blade speed and power to spare

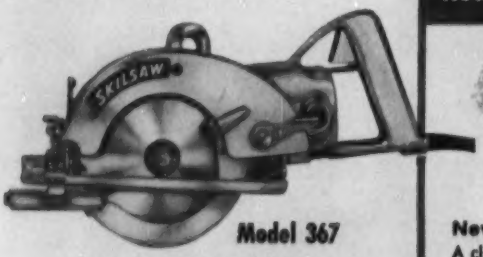
. . . all for only $95.00!



With power and speed to spare, new SKIL Model 367 Saw keeps cutting where others slow down or stall out! Here's amazing cutting performance . . . on extended rip cuts . . . on bevel miters for rafter cutting . . . in green or wet lumber . . . in metal, stone, laminates and many other highly resistant materials.

Now there's no need to sacrifice power, speed and long trouble-free service for low price! At only $95.00, the new SKIL Super-Duty 367 compares in price with *ordinary* saws. Yet SKIL offers reserve power and speed for all construction cutting. And brand-new features give easier, safer handling . . . greater accuracy and control!

Before you buy any saw, be sure to "test-cut" the new SKIL Model 367! It's easily the greatest saw value on the market!



Model 367

- **Depth of cut at 90° 2 3/16"; at 45°, 1¼"**
- **Free speed, 4750 r.p.m.**
- **Net weight, 13 lbs.**

See Your Distributor for Complete Information, Or Call Your Nearby SKIL Factory Branch.

SKIL
PORTABLE TOOLS

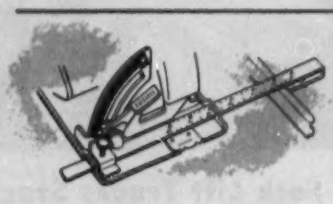
Made only by SKIL Corporation, formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
3601 Dundas Street West, Toronto 9, Ontario
Factory Branches in ALL Leading Cities

Over one million SKIL Saws in use

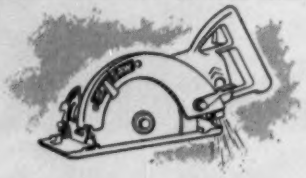
New SKIL Features Improve Cutting Ease, Accuracy, Safety!

New Variable Torque Clutch! A clutch that really works! Protection against saw damage and kick-back. Foolproof, dependable!

New Aluminum Alloy Foot! 40% stronger! Remains true and accurate under hardest use. Reduces weight two-thirds.



New Adjustable Bevel Scale! Assures miter-box accuracy throughout life of saw.



New, Improved Sawdust Ejector! Blows dust away from operator. Clear sighting for greater accuracy.

PLUS ALL THE ADVANTAGES OF FAMOUS SKIL SUPER-DUTY DESIGN

NOW
REO
Turbodiesels

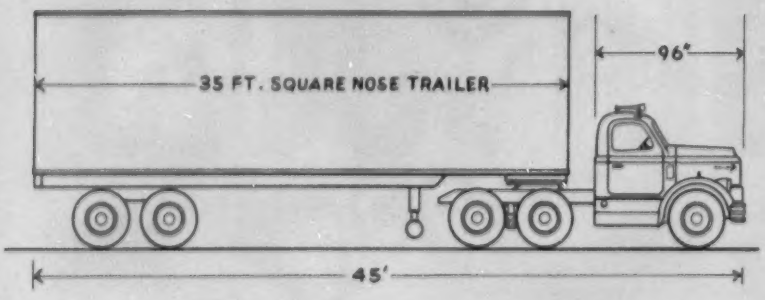
96" FULL COMFORT CAB

...at no premium price!

REO 96" A SERIES
with Cummins 175 h.p. JT-6B Turbodiesel

All the rugged engineering features of the *world's toughest trucks* plus exceptional maneuverability and roomy driver comfort of full-size conventional cab. *96" cab tractor pulls modern high-capacity square-nose trailers within 45' overall.* Tandem and single axles. All standard wheelbases for straight truck and truck-trailer uses, on or off highway. Models up to 48,000 G.V.W. or 62,000 G.C.W.

Reo A Series also in Gas or LPG Gold Comet short-stroke, wet-sleeve V-8s, 195—220 h.p.



REO

REO FULL COMFORT CAB...

at no premium price!

REO F SERIES

with Cummins 175 h.p. JT-6B Turbodiesel

All the famous engineering and rugged-duty construction features of the *world's toughest trucks* in a highly maneuverable, easy-handling conventional style cab. Roomy comfort reduces driver fatigue. Smooth, low-vibration-level performance under extreme loads at high throttle.

Tandem and single axles. All standard wheelbases for straight truck and truck-trailer uses, on or off highway. Models up to 48,000 G.V.W. or 62,000 G.C.W.

Reo F Series also available with Gas or LPG Gold Comet Engines—short-stroke, wet-sleeve *sixes*—from 107 to 160 h.p.

COMING SOON! **200, 250 and 300 h.p. Turbodiesels in the new Reo Super-V 63 (COE).**

● what's next...watch

MAIL FOR COMPLETE INFORMATION TODAY!

REO MOTORS, INC.
LANSING 20, MICH.

Please send, immediately, information on Reo Diesels:

"A" Series_____ "F" Series_____

New Reo Super V (COE)_____

Gold Comet "6"____ V-8____ Gas____ LPG____

NAME

COMPANY

TITLE

ADDRESS

CITY COUNTY STATE

ID 12

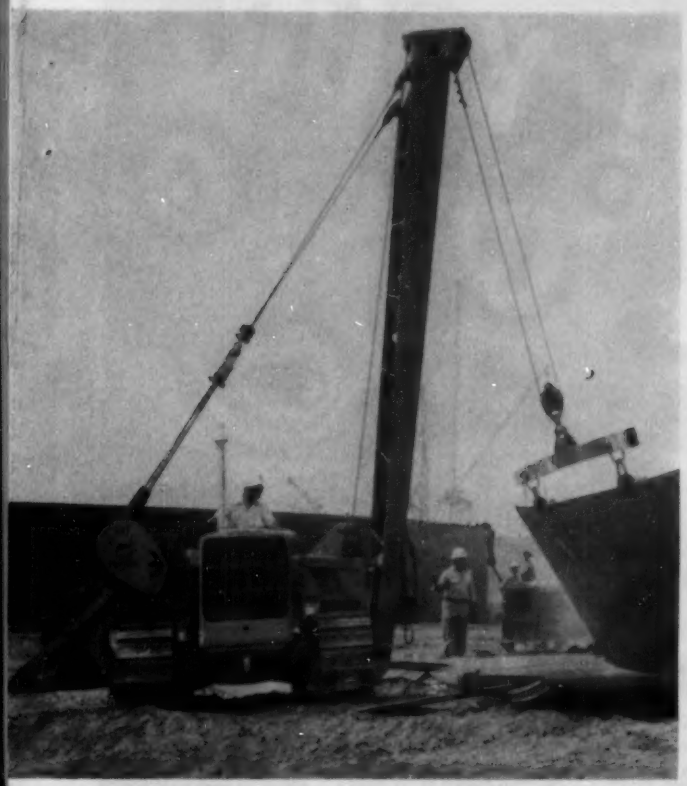
REO

LANSING 20, MICHIGAN · TORONTO, ONTARIO

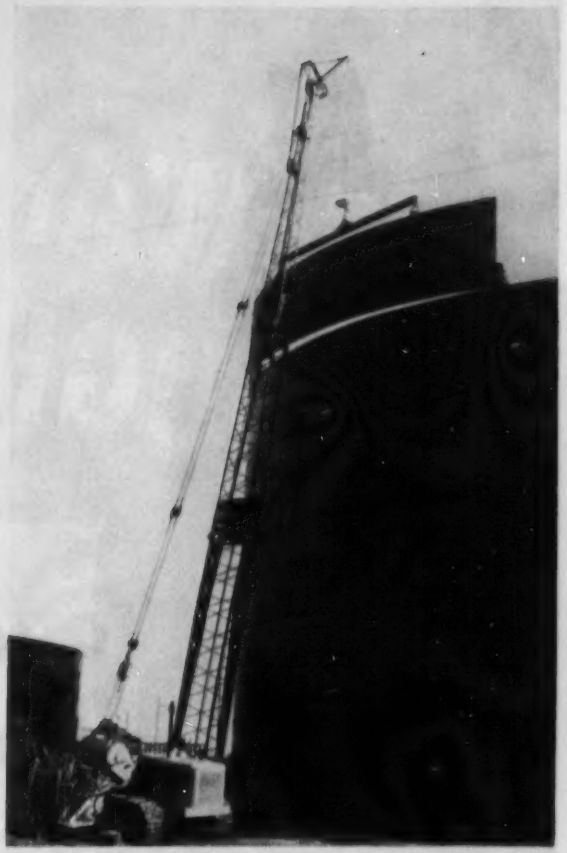
SUBSIDIARY OF BOHN ALUMINUM AND BRASS CORPORATION

WORLD'S TOUGHEST TRUCK

REFINERY JOB . . . Continued from page 107



HEAVY steel plate for storage tank is lifted by Caterpillar MD6 pipe-laying tractor with stub section of special side boom.



FULL LENGTH 65-ft side boom is made in three sections. Extra counterweight is needed. Tractor easily rides rough ground.

Tractor's Side Boom Erects Steel Tanks

Steel wall plates for big oil storage tanks are easily erected by Caterpillar pipe-laying tractors equipped with special booms made by Chicago Bridge and Iron Co. The boom is 65 ft long and comes in three sections. To erect the bottom ring of thick wall plates, only the rugged stub section of the boom is employed. As the tank rises, the other sections are added. To provide additional counterweight, a bracket is mounted on the side of the tractor, and a weighted drum placed on top.

(Continued on page 118)

COLOR CODE of hard hats is boon to timekeepers and also helps foremen locate men. Worker places black stripe on white hat to designate concrete worker. More than 25 color patterns are needed to cover all crafts.

WE WANT YOUR TOUGH JOBS!

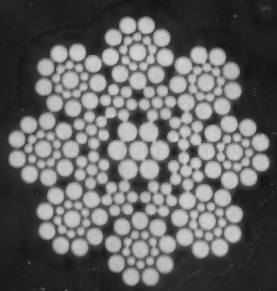
for J&L CenterFit Wire Rope

Three characteristics give J&L CenterFit Wire Rope the staying power to develop outstanding service in applications where shock, fatigue, and heavy loading limit the service life of standard wire rope.

1. CENTERFIT is the strongest standard rope produced.
2. CENTERFIT is more flexible in operation than any standard IWRC rope.
3. CENTERFIT has unsurpassed resistance to shock loading.

Over the years CenterFit has built a record for outstanding service life on the toughest applications such as shovel hoist ropes, back hoe pull ropes, and clamshell holding and closing lines where overloading is a factor.

If you're operating where loading, shock and fatigue are severe, chances are J&L CenterFit can help you cut your wire rope costs. Contact your nearest J&L Office or representative.



J&L STEEL

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*

New! The Sherman Major Power Digger

with Many Advanced Features to Increase Versatility and Earning Power

The all new Sherman Major Power Digger has been engineered to take full advantage of the ruggedness and economy of the Fordson Major Diesel Tractor. This heavy-duty unit will dig 12 feet below grade, reach 18 feet 3 inches behind the tractor rear axle, dig throughout a swing arc of 180° and will carry a full bucket to a height of 8 feet 8 inches for loading trucks.

Additional features of the new Sherman Major Power Digger include twin crowd cylinders, heavy steel plate construction, large diameter hinge pins, heavy steel castings, replaceable hardened steel bearings at hinge points, and a newly designed dipstick, boom, cylinders, bucket and sub-frame assembly.

Write for bulletin No. 841.

See the Sherman Major Power Digger soon at your local **FORD TRACTOR DEALER**

Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS

*Designed, Engineered and Manufactured jointly by Sherman Products, Inc., Royal Oak, Michigan. Wain-Roy Corporation, Hubbardston, Mass.

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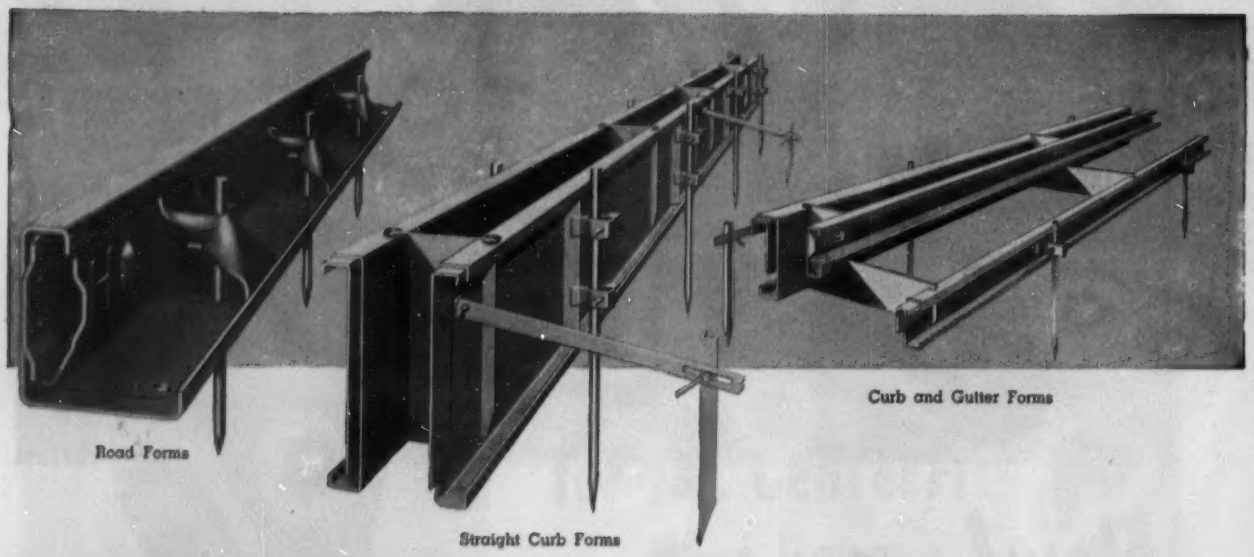
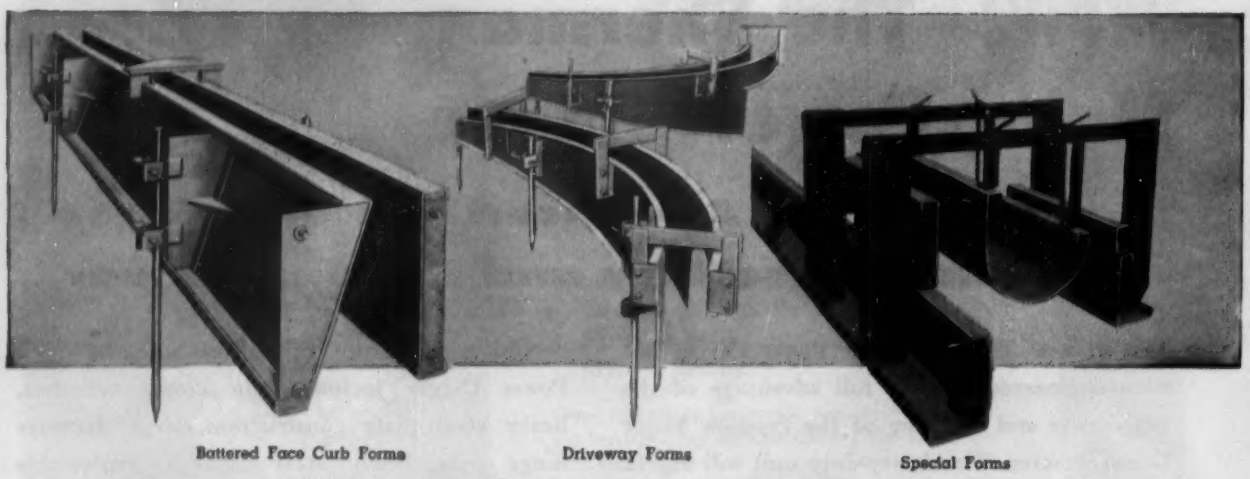
Form Engineering



Road Forms

Straight Curb Forms

Curb and Gutter Forms



Battered Face Curb Forms

Driveway Forms

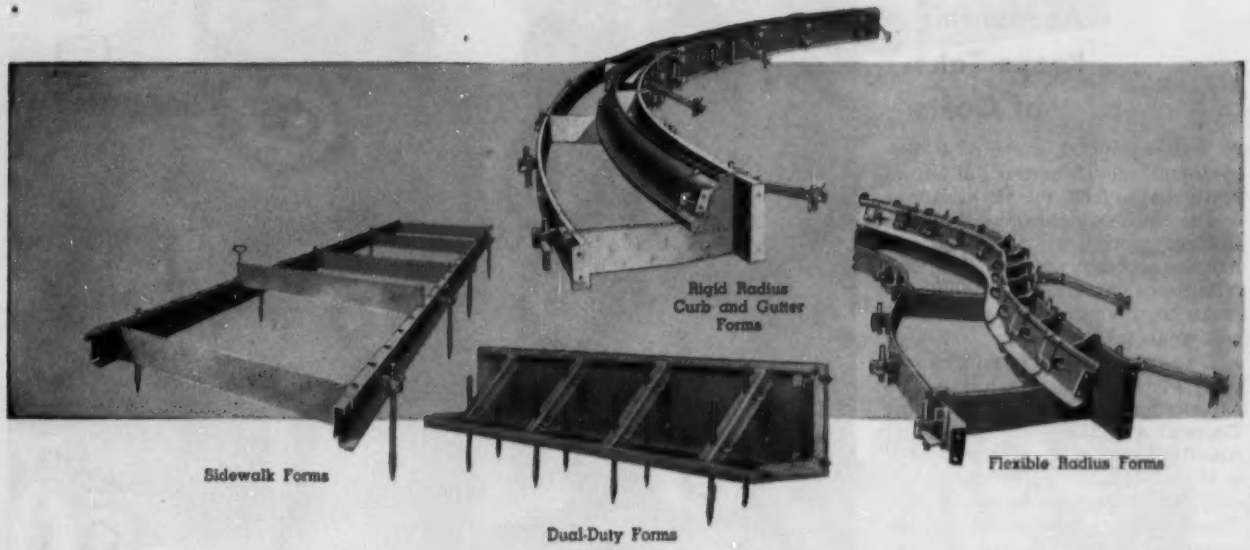
Special Forms

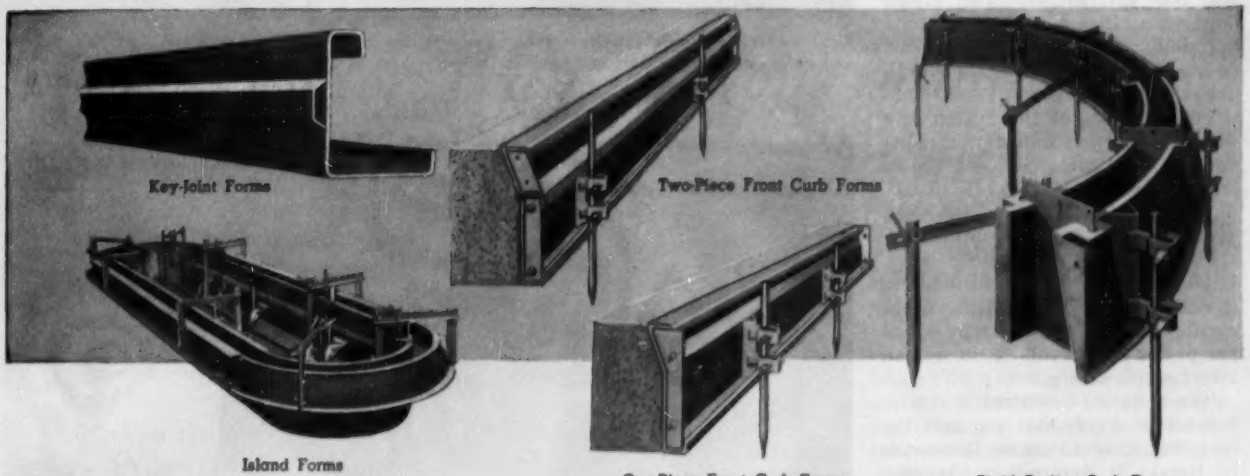
For 49 years, Heltzel has been supplying leading construction firms with the industry's finest engineered forms for the widest range of application.

It is this broad experience that enables Heltzel to better engineer steel forms for any specific requirement. And, because Heltzel engineers are always searching for better forming methods, you can always be certain you're getting the most up-to-date equipment when you specify "Forms by Heltzel."

When next you're in the market for forms, standard or special, write direct or contact the Heltzel representative in your area. He carries many of the more popular styles and types in stock.

Never Stops At Heltzel





FOR YOUR FILES

Handy form booklets from which you will be able to select the exact form for any job need. Write today for your copies.

HELTZEL

STEEL FORMS

THE HELTZEL STEEL FORM and IRON COMPANY

74000 Thomas Road **WARREN, OHIO**

REFINERY JOB . . .
Continued from page 113

Job-Site Accounting Keeps Tabs of Costs

A well-equipped accounting department set up at the job site is really paying off for C. F. Braun & Co. Besides making up the payroll for more than 6,000 men, it handles accounts payable, time distribution, materials distribution, materials inventories, and detailed cost analyses.

It's a completely mechanized setup. Machines are rented from International Business Machine Corp. at a cost of about $2,000 per month. Heart of the department is a Model 604 computer which can calculate 6,500 checks in 50 min. There also are two Model 402 accounting machines, two sorters, three collators, two reproducers, four key punchers, four verifiers, and one interpreter. The entire department has a staff of 14, only a fraction of the number required to handle this many functions with a conventional system.

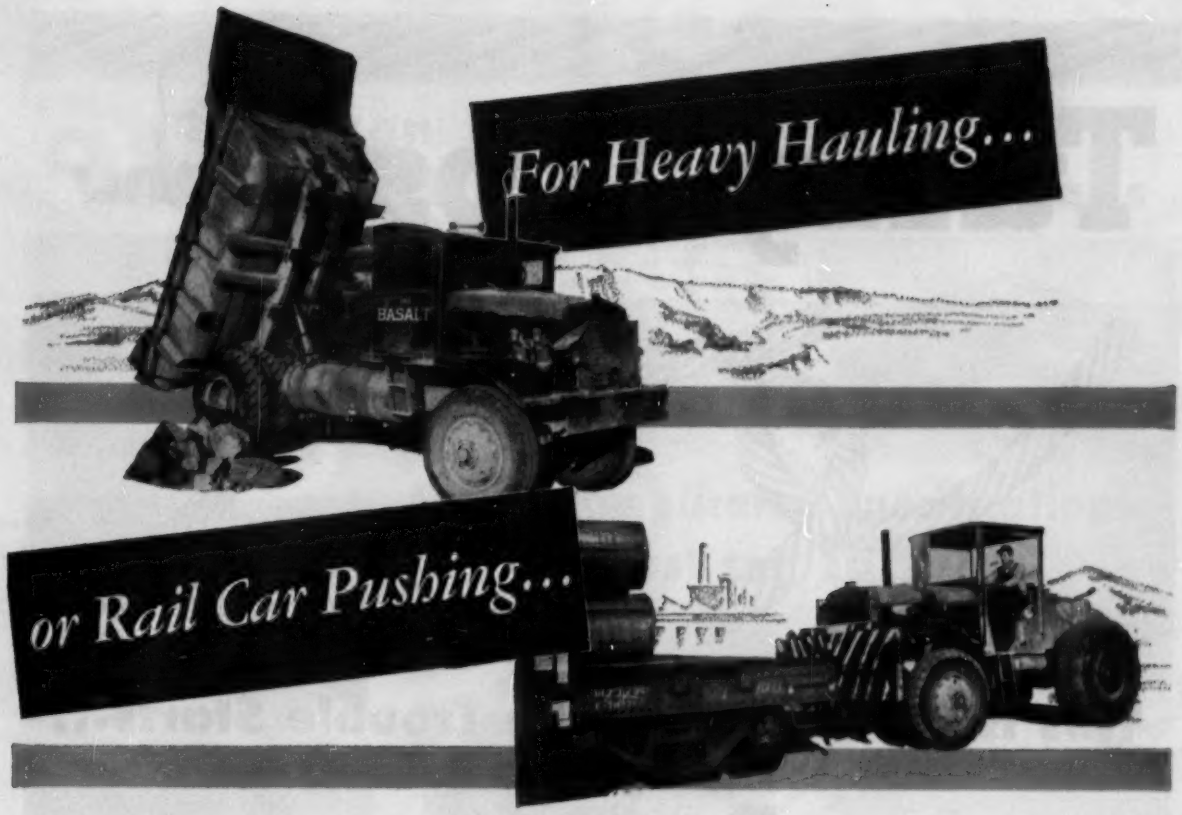
Top features of the system are the cost analyses and material inventories. A detailed cost report is prepared every week. It breaks down into 11 separate analyses, giving the cost per area, unit, craft, operation, and several other ways. Each foreman and superintendent, therefore, is provided with an accurate, current cost accounting of his phase of the job. And he can spot trouble at a glance.

The material inventory system is a must on a job that requires the installation of so many thousands of items. It determines the date that each item is ordered, and then follows it through until installed.

Payroll is handled with badge number control by craft. A standard 8-hr punch card is filed every day for each man. If there are any changes, such as overtime, a new card is made out to replace the standard card. At the end of the week, the five cards are summarized and recorded on a single card. Batches of weekly cards are then fed into the computor, which quickly makes the complex calculations and punches the amount of pay. These cards then go into accounting machines which print checks at the rate of 100 per min.

BUSY accounting office at job site is well-stocked with IBM machines. Men handle machines, and women operate punchers and verifiers. Monthly rental is $2,000.

WORKER operates sorter set up near computer and collator. On payroll work, computer can calculate 6,500 checks in only 50 min, including many complex deductions.



Fuller Transmissions handle the hard jobs easily for Basalt Rock!

Twenty Euclid dumps and two tractors converted into "car pushers" . . . *ALL* Fuller Transmission equipped . . . handle tons of the heaviest work around Basalt Rock Company, Napa, California.

Twelve rear dumps and the two pushers are equipped with Fuller 5-A-920 5-speed Transmissions, and the eight Model 9FDT bottom dumps with Fuller 4-B-86 4-speed Transmissions.

In both these applications Fuller Transmissions deliver the horsepower faster. Right gear ratios, short, easier shifts, result in faster work cycles. Heavy rock and gravel hauls for the dumps . . . industrial locomotive loads for the "pushers"—these are the daily jobs that Fuller Transmission equipped units are doing efficiently at the main Napa plant, the Healdsburg gravel plant, and in the McNear Stone Quarry on San Pablo Bay.

The company started building this fleet of Euclids with Fuller Transmissions in 1938 . . . made additions in 1944, '45 and '46.

ALL ARE GIVING EXCELLENT SERVICE IN 1956—DELIVERING MORE WORK TIME WITH MINIMUM DOWN TIME!

Select *YOUR* transmissions from Fuller's 110 models—both semi-automatic and full manual control. You'll find the transmission designed to do *YOUR* job . . . better . . . at less cost.

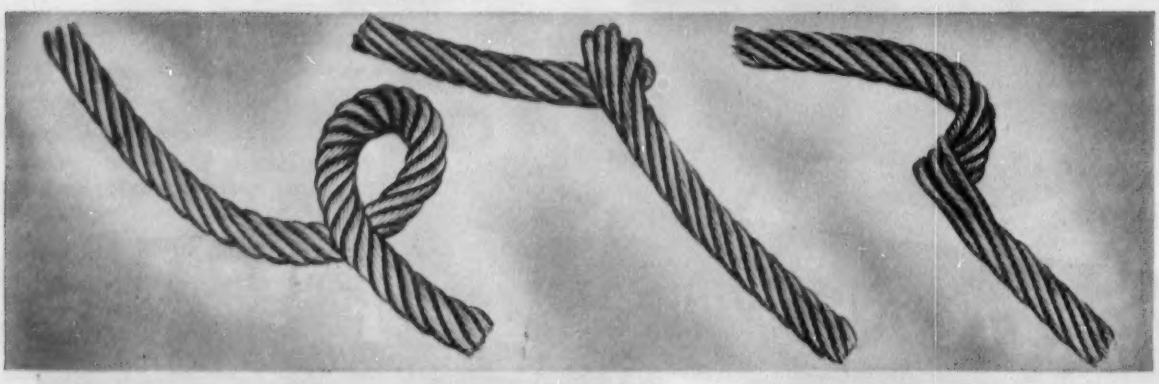
where horsepower *really* goes to work

Fuller TRANSMISSIONS

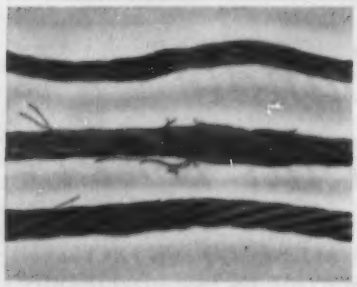
FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

Tuffy® Tips



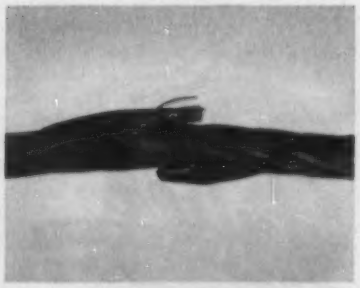
This Is Often Where The Trouble Starts...



Here are three types of open kinks, all resulting from mishandling of wire rope. Guard against kinks by winding rope properly on the drum, and *never* pull a loop smaller, always enlarge it then straighten out the rope.

The start and finish of doglegs; the end being the point when all the wires on one side of the rope were worn through. Anything, such as a pulled loop, that causes a permanent bend or "set" will result in a dogleg.

While different wire rope is constructed to resist abrasion to different degrees, improper use leads to injury. Watch for abrasion and when it begins to show locate the point where it is occurring and correct the cause.

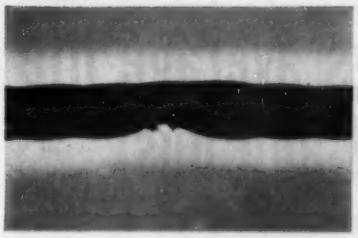


Severe corrosive water conditions caused rust and corrosion to produce a one-strand break in this rope. Lubrication during the time the rope was in service would have retarded the damage . . . added greatly to the rope's life.

If broken in improperly, high strands like these may result. When installing, make sure that the fabricated relation between *strand with strand* and *strands with core* are not changed.

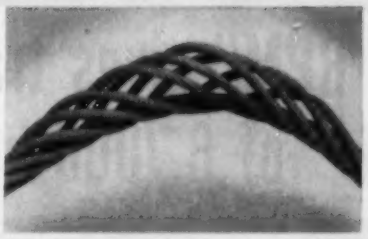
Nailing a wire rope through the core often causes many undesirable results. The wires and the core are badly damaged. A high strand may develop near the end or many feet away.

Broken Rules Break More WIRE ROPE Than Capacity Loads

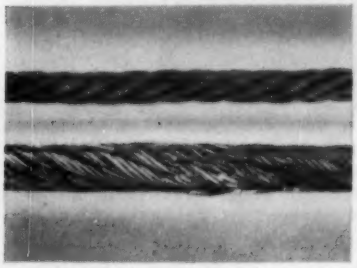


The photo at the left shows what happens when rope is run over or struck by a hard object and crushed. The damage to the strands greatly reduces the service life so carefully built into the rope.

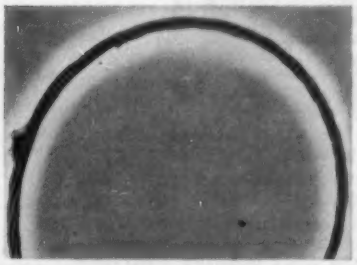
Photo at the right shows how sudden release and rebound from an over-stressed condition may often cause birdcaging. Throwing a loop into the rope is also a major cause of birdcaging. Lang Lay ropes in particular are vulnerable to this abuse.



Here is an example of excessive pinching in the sheave grooves. This rope lasted through only 1-½ hours of service. To prevent pinching, make sure grooves are not worn deep and that the bearing surface is sufficiently large.

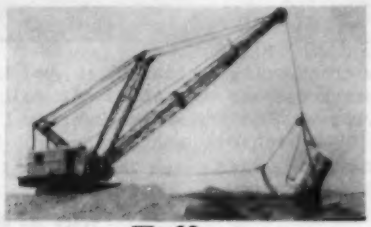


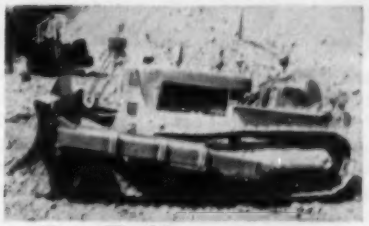
Excessive drum crushing like this occurs at points of cross-over or when rope is wound unevenly. Check for even winding of each layer on the drum to prevent crushing of this type.



When a popped core occurs, continued use causes the rope lay to lengthen out considerably. This displacement of the core is usually caused by load tension being suddenly removed from the rope.

Forget Complicated Specifications— Just say Tuffy!





Tuffy Scraper Rope

Mount a reel on your scraper and get full service out of every foot. Specially constructed for scraper service where complex destructive forces overwhelm ordinary rope.

Tuffy Slings & Hoist Line

Slings of the famous Tuffy machine braided, kink-resisting, 9-part construction, cut replacement costs. For balanced performance, team them up with Tuffy Hoist Line.

Tuffy Dragline

Flexible enough for easy coiling, tough enough to give you maximum abrasive resistance and service life in handling wet or dry, hard or soft materials.

Tuffy Dozer Rope

Has the stamina needed to stay on the job after ordinary ropes are thrown away. In 1/2" or 9/16" size on 150' reels for easy mounting to facilitate cut-off without waste.

Your Tuffy Distributor: Dependable Source of Information.

His job is more than just supplying the wire rope you want—when you want it. Your Tuffy distributor is always on the alert to help make your equipment do the best possible job, at the lowest possible cost. When you have a problem that calls for special knowledge concerning your equipment that uses wire rope, give your Tuffy distributor a call. He'll be glad to furnish the help you need including factory engineers.

union Wire Rope corp.

2270 Manchester Avenue Kansas City, 26, Missouri

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand

2

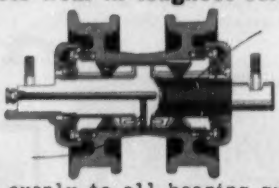
The Engineer's Field Report

CASE HISTORY
LUBRICANT RPM Tractor Roller Lubricant
FIRM Curtis Construction Company, Spokane, Washington

"RPM" gives track roller bushings average life of 6-7000 hours work in sand and dust

RPM TRACTOR ROLLER LUBRICANT extends track-roller and bearing life for Curtis Construction Company, Spokane, Wash., even in toughest service. Bud Burbank, Curtis Master Mechanic, says, "RPM Tractor Roller Lubricant gives our rollers an average life of 6,000 to 7,000 hours, and then bushings are usually good enough to reface and put back in service. We've used RPM Tractor Roller Lube in all our track-type equipment for five years. I like it because it stays in, and makes a good seal that keeps dirt out." D-8 Cat (above), stockpiling sand for paving project, works 16 hours a day 6 days a week in grit and heavy dust, yet track-rollers stay in top condition with little maintenance. Curtis uses RPM Tractor Roller Lubricant in 13 pieces of track-type equipment, a Bucyrus-Erie sheepsfoot roller, and a 10-ton steel wheel roller.

Why RPM Tractor Roller Lubricant resists wear in toughest service



It flows evenly to all bearing surfaces, lubricates and retards rust formation.

Contains chemical anti-wear agent—maintains tough lubricating film.

Has stringiness compound—improved viscosity, resists leakage, helps keep protective grease seal outside bearings.

Remarks: There are three grades of RPM Tractor Roller Lubricant to meet all operating conditions in track-roller bearings. For Allis-Chalmers tractors, RPM Tractor Roller Lubricant A/C Type is recommended.

For More Information about petroleum products of any kind or the name of your nearest distributor, write or call any of the companies listed below.

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THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

Inequities Boost Premiums For Workmen's Compensation

Commenting on CM&E's recent series of articles on construction insurance, Thomas M. Lively consulting safety engineer whose clients include S. J. Groves & Sons Co. and Johnson, Drake & Piper, Inc., points out several apparent inequities in premium charges for Workmen's Compensation insurance. He suggests that if contractors were aware of the situation, trade organizations could help eliminate these injustices.

To the Editor:

Please let me take this opportunity to compliment your fine magazine on the very excellent three-part insurance article written by Edward G. Armitage that appeared in your October, November, and December issues. Every contractor should read this series of articles, and I, for one, would like to urge you most strongly to print these in booklet form for distribution to the trade.

It is recognized that to cover this field adequately one would have to write volumes, but there are several additional bits of information that should be brought to the contractor's attention. In connection with Workmen's Compensation coverage and the experience modification of rates, it should be remembered that the contractor deals with a number of completely different situations:

1. Over 30 states and territories are grouped in what is known as the Interstate Pool, wherein the experience in any of these states is pooled and the rate modified on the basis of this experience, with the result that the credit or debit status developed in this manner applies in all of these states and territories.

2. In addition to the Interstate Pool, there are a number of states that are individually rated on the basis of experience developed within the boundaries of that particular state only, and the modification arrived at applies as to coverage in that state only.

3. Other states are classified as Monopolistic or State Fund states. In these states you are not permitted to insure through a regular insurance carrier, but must insure through the State Fund and be guided by the rules and rates set up by the law and actuarial bureau of that particular state.

4. The final grouping is Elective States. In these states it is up to the individual contractor to decide whether it would be to his advantage to insure through the available State Fund or through a private insurance carrier.

I would also like to point out several inequities in insurance premium charges. If enough contractors were cognizant of these inequities they might demand that their trade associations and other agencies work toward the elimination of these injustices:

1. In a number of states the contractor is required to pay Workmen's Compensation premiums on ALL straight time payroll, regardless of whether the employees' weekly pay exceeds $100 or not. In other states the $100 limit applies. I believe the maximum benefits which any claimant could possibly receive is more than adequately covered by the premium developed on a $100 weekly pay limitation.

2. A contractor who gives paid vacations, or pays his supervisors or other employees for non-working time, such as winter lay-ups, must pay premiums on all of this non-productive payroll, even though the employee cannot claim compensation for an injury because it could not have been incurred while working. This works against the contractor who attempts to be fair to his people by keeping them on the payroll through non-productive periods.

3. In most states, overtime is figured as straight time when totaling up the employee's salary. However, in a few states the contractor is required to pay a premium based on the employee's regular wage rate, plus the time-and-a-half pay he receives for overtime. In effect, the contractor is required to pay 50% more premium for every overtime hour worked by an employee, although the risk remains the same.

Once again let me thank you for a grand and most needed series of articles. Don't forget the earlier mentioned suggestion, that these be incorporated in booklet form for distribution to the trade.

Very truly yours,
Thomas M. Lively
Consulting Safety Engineer
1004 Wesley Temple Building
Minneapolis 3, Minn.

EDITOR'S NOTE: Mr. Lively is correct in saying that the contractor deals with a number of different situations when he purchases Workmen's Compensation coverage.

A break-down of the types of insurance coverages available in the various states follows:

Interstate Pools: Arkansas, Colorado, Connecticut, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and Wisconsin.

Individually Rated: Alabama, California, Delaware, New Jersey, Pennsylvania, Texas, and Utah.

Monopolistic State Funds: Nevada, North Dakota, Ohio, Oregon, Washington, West Virginia, and Wyoming.

Elective State Funds: Arizona, California, Colorado, Idaho, Maryland, Michigan, Montana, New York, Oklahoma, Pennsylvania, and Utah.

Insurance Series Reprints Available

The contractor spends about 10% of his overhead on insurance, yet he probably knows less about insurance than anything else he buys. Edward G. Armitage, a construction insurance specialist, has written a concise, easily understood analysis of contractors' insurance problems for CM&E. Copies are 25¢. Address requests to the editor.

Wintertime concreting at Iroquois Dam Requires...

Hot Mix for Cold Weather

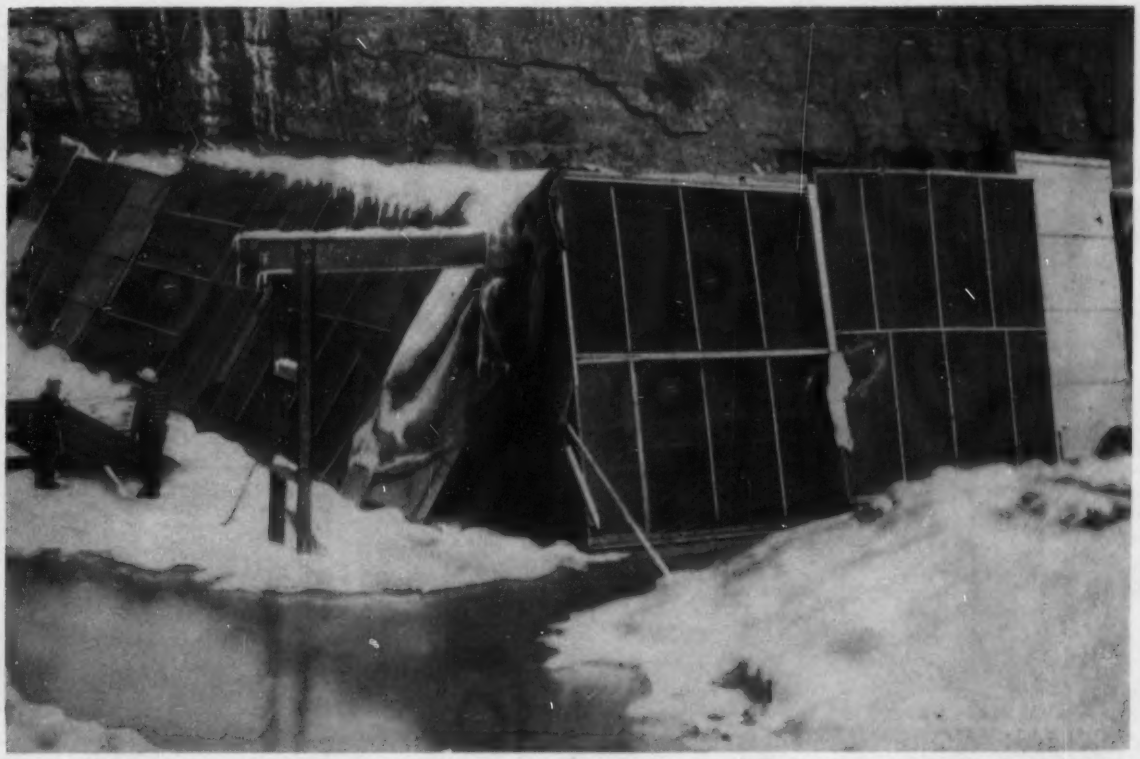
ONE OF THE most interesting winter operations on the St. Lawrence is the concreting at Iroquois Dam near Ogdensburg, N. Y. Mixing water and aggregate have to be heated; pours have to be extensively protected. But still the concrete goes in, and at rates up to 90 cu yd per hr.

Why pour during the worst construction season? A change in Kiewit - Johnson - Johnson's original contract added some 14,000 cu yd of concrete in a downstream apron. Unless some of this and other related work was pushed during the winter, river diversion through that portion of the dam, planned for later this year, might well be delayed. So K-J-J is concreting dam foundations, abutment, piers, and apron, even though the in-place cost per yd has soared. To date, more than 17,000 cu yd have been poured.

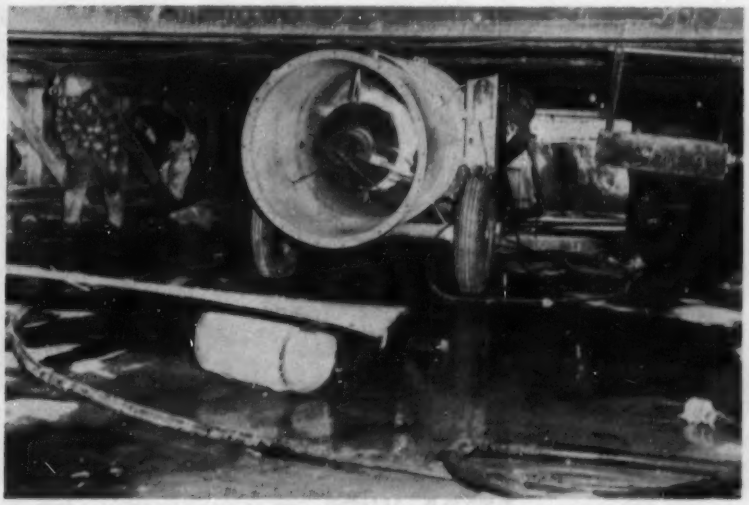
Preparatory work for a pour (cleaning, sandblasting the previous lift, formwork, and reinforcing) is done in the shelter of the enclosures that later protect the concrete. The enclosure is merely a series of steel frames and prefabricated insulating panels.

STEEL GIRDERS are swung into place by Manitowoc 3900 crane to support panels to make protective enclosure. Girders, 100 ft long, are made of sheetpiles held 18 in. apart.

Main girders of the supporting frame are fabricated of Bethlehem SP-6a sheetpiles already on hand for later use in cofferdam cells. Two parallel 50-ft lengths of piling are blocked 18 in. apart with timber and bolted together. Two such 50-ft assemblies are spliced to make a single 100-ft girder that has, in effect, two vertical flanges and an intermittent web. The 100-ft length has considerable stiffness, can be handled easily by crane, and is long enough to extend complete-



ENCLOSURE PANELS are 12x20-ft wood frames faced either with Sisalkraft, tarpaulin canvas, or insulating board. Here they are protecting an abutment pour at U. S. end of 2,335-ft regulating dam. Structure calls for more than 180,000 yd of concrete.



ENCLOSURE HEATER delivers some 2,000,000 Btu, allows men to work efficiently despite sub-zero temperatures outside. Unit burns butane gas, has powerful electric blower.

ly over the largest pour. It must, however, be supported at the one-third points by A-frame posts of pipe.

Insulating panels are placed atop the girders and leaned against the sides to make the enclosure. Panels are 12x20 ft, framed of 2x4 and 2x6-in. timbers. Originally, both sides were faced with Sisalkraft, leaving a dead air space between. This gave the panel excellent insulating qualities and kept it light enough (about 500 lb) so that it could be handled easily by four men, one at each corner.

Only drawback was that fly rock from blasting operations alongside punctured the paper easily. Somewhat better success was had with panels faced with Graylite or Insulite sheathing or with canvas. But these panels weigh close to 1,000 lb and must be handled by crane.

Enclosures are warmed by butane-fired Behlen forced-draft heaters. Originally developed for on-the-farm drying of corn, the units are rated at 4 million Btu per hr maximum. However, K-J-J has installed smaller jets in the burners to cut heat delivery to about half the rated capacity. This modification, while leaving the heaters' large blowers unchanged, eliminates any hot spots that might have developed directly in front of the units.

Inside the heated enclosures, regular Blaw-Knox cantilever steel forms are erected in 10-ft panels. The contractor also has had considerable success with job-built forms. These consist of 2-in. tongue-and-groove sheathing, 3x6 and 4x6 horizontal studs that are hook-bolted to double vertical 6-in. channel wales on 5-ft centers, and an inverted 8-in. channel as a top plate. Forms are held by Williams

(Continued on page 130)

(Advertisement)

Scaffolding Methods . . . by Patent Scaffolding Co.

CLEAR WORKING AREA — A. H. Maxted, masonry contractor, uses this tube and coupler scaffolding method when laying up brick veneer on the Broadway-Hale Department Store, Anaheim, Calif. The scaffold was erected from "TubeLox"® Scaffolding consisting of interlocking steel tubes and couplers. Short pieces of the tubular steel are secured to the inner scaffold posts and cantilevered toward face of building to support masons' platform. Ford J. Twaits is the general contractor on the multi-story building.

FAST LOCK-UP—"Trouble-Saver"® Scaffolding frames are available for sale or rental with these fast-acting SlideLoks for joining pivoted, diagonal braces to frames. Wing Nuts are eliminated, erection and dismantling time cut.

CLOSE AT HAND — Masons and materials are never far apart on this "Trouble-Saver" Sectional Scaffold. A separate 20"-wide platform is laid on sidewall brackets attached to scaffold frames at a convenient distance below the storage level. General contractor Damon G. Douglas uses this method for speeding masonry work on elevator shaft at Hyatt Roller Bearing plant in Harrison, N. J.

EXTRA WIDE — Wheeled buggy delivering half-pallet of bricks to masons has plenty of room on PS Co.'s 8'-wide "Gold Medal"® Safety Suspended Scaffold at the Northland Shopping Center, St. Louis. Masons have plenty of room, too, with drum mechanisms set back 20" from wall. Plastic window of enclosed scaffold can be seen at right. Contractor, Roy Elam Construction Co.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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Use VISQUEEN film under slabs, in foundations and as flashing around doors and windows. Perfect to cover finished millwork, sacked concrete and other materials subject to water damage.

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Title_____

Michigan Model 175A owned by E. J. Petrillo, Inc., sold and serviced by United Tractor and Equipment Corp., N. Y. C.

On the New York Thruway . . .

This 2¼-yd. Michigan loads out 6-ton oversize blast rock

This photograph shows a section of E. J. Petrillo's contract on the New York Thruway where the contract called for removal of an old granite quarry. Petrillo used one of his 2¼-yd. Michigan Tractor Shovels to load out oversize blast rock. Some of the rock weighed as much as 6½ tons and measured close to 8 ft. wide.

Used in place of crawler-loader

Superintendent Tony Tangredi said that the job normally would have called for a 4-yd. crawler-loader, but the crawler-loader wasn't available. So he decided to try the Michigan, even though he considered this an unusually tough assignment for a rubber-tired machine. During the three weeks the Michigan was on this job, its performance was satisfactory in every way.

Speed on the job

Petrillo's Michigans are always on the move—loading trucks in the borrow pit, handling general clean-up work all over the job. "A big advantage to us is the maneuverability of these Michigans", says Supt. Tangredi. "At 27 mph, they get where they're needed in a hurry—and you don't need trailers to move them. On this rock-handling job, we proved that the Michigans will handle the tough assignments along with the routine jobs."

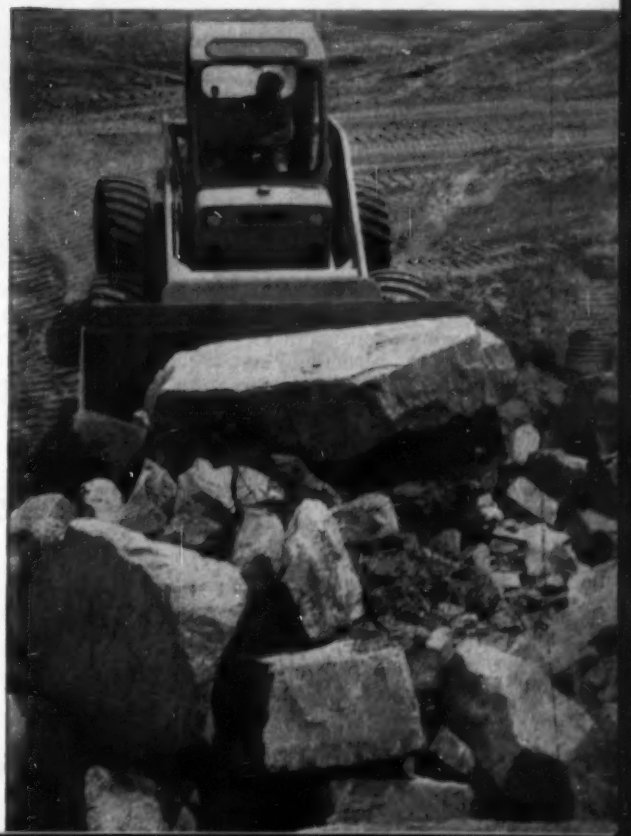
(Advertisement)

Note the size of the stones being loaded into the rear-dump.

Above: **Low-level bucket action** gets a heaping load of oversize rock. Note that the bucket is not even fully "closed"—the full tip-back arc is 40 degrees. The clean design of the Michigan bucket mechanism preserves the dumping clearance over truck sideboards.

Left: **Loading a rear dump,** the Michigan demonstrates fast dumping action. When the operator steps on the brake, the power-shift transmission automatically goes into neutral—puts the full engine horsepower into the bucket hydraulic system.

Below: **Good visibility** for the operator as he actuates the low-level tip-back. The Michigan Model 175A has 133 hp, power steering, 4-wheel power-braking, torque converter and power-shift transmission as standard equipment.



Handles the tough jobs

Like E. J. Petrillo, Inc., more and more owners have found that a Michigan will handle jobs which have always been considered too tough for rubber-tired Tractor Shovels. The exclusive Clark power-train — torque converter, power-shift transmission and planetary wheel drive axles — gives the Michigan more useable power and traction than you've ever seen on this type of machine. Your Michigan distributor would like the chance to prove it. Ask him to demonstrate on one of *your* tough jobs—you name it.

Michigan is a registered trade mark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
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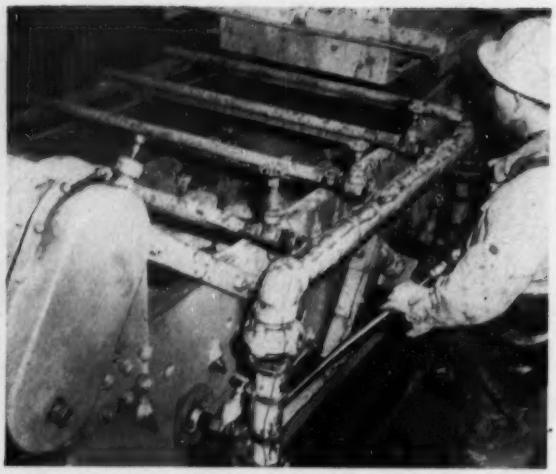
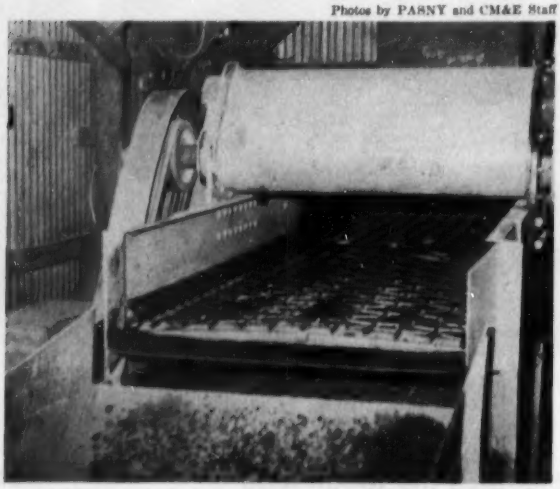
CONCRETE PLANT feeds 4-yd Johnson buckets carried by flatbeds and dump trucks. Plant penthouse encloses re-screening station.



RINSING STATION at base of plant conveyor cleans much-handled aggregate, which must be truck-hauled 20 mi to job site from quarry.

Photos by PASNY and CM&E Staff



RE-SCREENING STATION on top of concrete plant adds weight and vibration to structure, but no extra strengthening was needed.

tie rods embedded in the previous lift.

Concrete comes to the forms from a Johnson automatic plant with three Koehring 2-yd tilting mixers. An accompanying table lists some typical mixes. For these, trucks haul aggregate some 20 mi to job-site stockpiles from an independent crushing plant (see CM&E, Jan. p 60).

A 247-ft reclaiming tunnel of 8-ft Armco culvert pipe runs beneath the stockpile. For safety, a 24-in. escape pipe extends from the end of the main tunnel to beyond the rim of the pile.

Gates in the reclaiming tunnel load a 30-in. Atlas 400-tph belt conveyor. This dumps on to a second 112-ft belt leading to a washing and dewatering station fitted with a Cedarapids double-deck screen with sand bypass and No. 5 mesh reject. However, washing is not done during the winter because of the difficulty of disposing of rinse water.

From this station a 301-ft Atlas conveyor lifts aggregate to a re-screening station atop the concrete plant. Here a 4x14-ft Cedarapids triple-deck horizontal vibrating screen bypasses sand, rejects No.

(Continued on page 133)

Typical Concrete Mixes
(lb per cu yd)

	Apron	Abutment	Pier Face
Cement	376	282	394
Water	177	172	185
Sand	844	904	1,005
¾" Stone	633	641	816
1½" Stone	492	499	816
3" Stone	724	734	1,000
6" Stone	1,043	1,056	—
Air %	3½	3½	4½

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Massachusetts Toll Highway Project

Berlanti Construction Co. Inc., Harrison, N. Y., has the contract for a 3-mile section of the new Massachusetts Toll Highway in the towns of Palmer and Brimfield, Mass. The photo shows a location where some of the 1½ million yards of fill will be required.

LIKE other leading contractors, Berlanti Construction Co. Inc., is mighty careful about controllable costs, particularly maintenance expense.

And that's an important reason why the Berlanti people select Gulf as their supplier of petroleum products on every job. They have found that Gulf quality lubricants keep their maintenance costs at rock bottom levels . . . and they appreciate Gulf's prompt delivery service and helpful petroleum engineering counsel.

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at 100 rpm slower speed (1700 instead of 1800 rpm)

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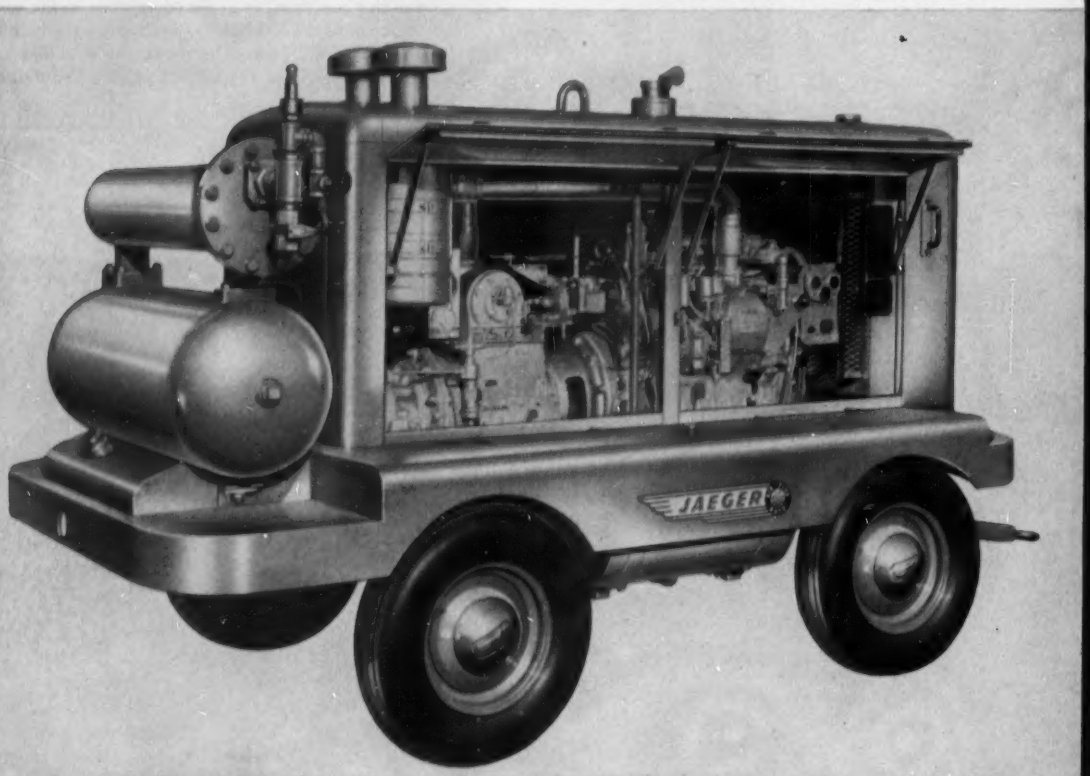

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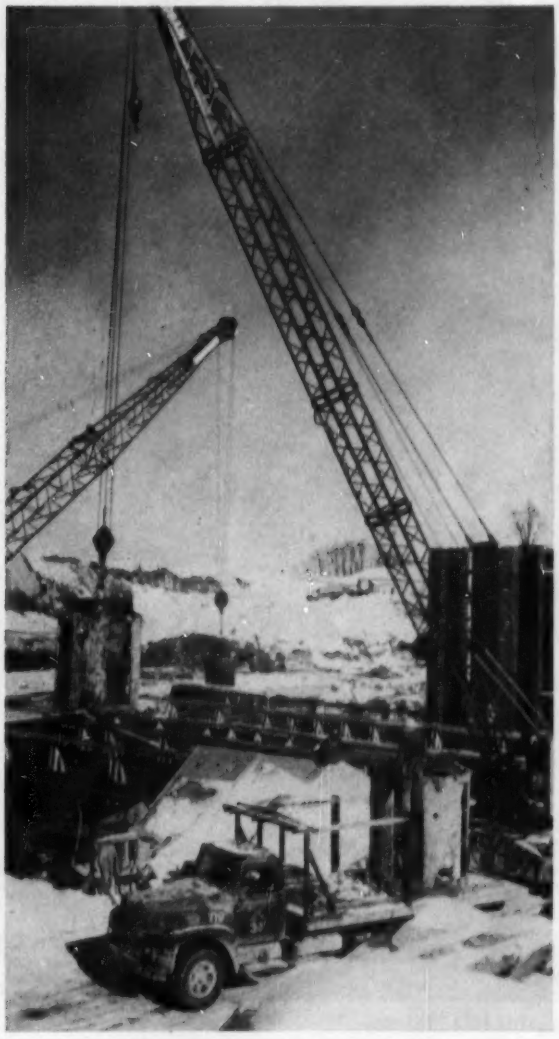


CONCRETE IS POURED by cranes that also shift enclosure panels around to cut heat loss. Timber frames hold these extra high.

BUCKET IS DUMPED by air and consolidated with Chicago Pneumatic vibrators. Close reinforcing here precludes cobbles in mix.

HEAT IS DIRECTED toward point of pour by blocking up rear end of corn dryer that blows hot air. It is moved as pour progresses.

5, and directs the rest into the appropriate bins.

Aggregate is heated in a variety of ways. Steam lines beneath the sand stockpile warm that material; steam jets are introduced at the reclaiming gates for sand, ¾ in. and 1½-in. stone; the reclaiming tunnel itself is heated by 10-ft lengths of finned steam radiator at all gates to impart considerable warmth to the material above; and hot air is ducted into aggregate bins in the concrete plant.

A Behlen heater supplies the air for the bins; a McKiernan-Clayton 125-hp steam generator furnishes steam for the other operations. The latter also feeds various steam unit heaters throughout the plant, return steam from which is used to heat mixing water in the supply tank.

Specs call for concrete to be at least 50 deg going into the forms. At the start of a pour, sand and stone are usually so hot that heated mixing water is not necessary. As material is withdrawn from deeper in the stockpile, water temperature is increased to compensate for the cooler aggregate. It is seldom necessary to heat the water above 120 deg.

Concrete is mixed for 2½ min, then dumped to 2 and 4-yd buckets for truck haul to the pour site. Here a Lorain 524 Moto-Crane and a Manitowoc 4500 transfer the 1 to 2-in.-slump mix to the forms. Usual winter rate of pour is 50 yd per hr, with a top of 90.

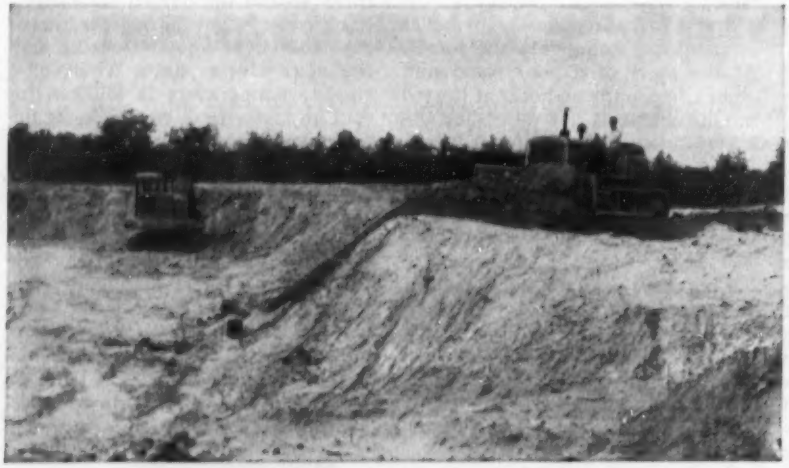
Concrete is cured by water spray within the heated enclosure. It is protected at 50 deg for three days and kept above freezing for the next eleven days. Then enclosure temperature is allowed to cool no faster than 40 deg in 24 hr to prevent thermal shock.

Kiewit-Johnson-Johnson is a joint venture of Peter Kiewit Sons' Co., Arthur A. Johnson Corp., and Al Johnson Construction Co. Running the $14 million job is Harry Sall, project manager, with Everett Eyden as project engineer. C. G. Metcalf is general concrete superintendent. A. F. Wilbur is resident engineer for Uhl, Hall & Rich, who are consultants to the owner—the Power Authority of the State of New York.

JOBS on the move

New design, outstanding features of Allis-Chalmers HD-11 Tractor and HD-11G Tractor Shovel help step up output on all kinds of work

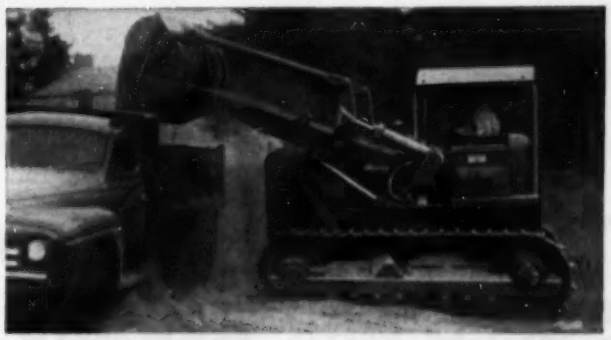
Dozing and excavating in Paradise Valley, Pa., this HD-11 dozer-tractor is working on the job of replacing and relocating parts of a township road washed out in floods. The unit, owned by S. R. Nauman and Sons, Cresco, Pa., is shown here dozing out part of the 2,000-yd excavation, preparing grade for placing 10,000 tons of crushed stone base.



Grading, stripping and stumping are some of the jobs handled by this HD-11 Tractor with hydraulic bull-dozer blade. The unit, shown here stripping a gravel borrow pit for fill on roads, is owned by Atlantic County in New Jersey. There's a full program of work for the tractor — snow removal in winter and general maintenance on 390 miles of road the rest of the year.

Clearing and skidding on a logging operation is the full-time job of this HD-11 Tractor. Equipped with a canopy and dozing blade, the unit is working in Deschutes National Forest for Lundgren Lumber Co., Bend, Ore.

Excavating and stockpiling topsoil for a new athletic field in Bel Air, Md., this HD-11 Tractor with bulldozer is on the job about 50 hours a week. The owners, T. & T., Inc., Whiteford, Md., use the tractor to strip topsoil, grade area, replace topsoil and landscape. About 28,000 yd of excavation will complete the job.



Excavating and dirt moving on a 12,000-yd job for a service station location is speeded by this HD-11G tractor shovel. The new unit is one of a fleet of five Allis-Chalmers tractors owned by Bass Construction Co., Seattle, Wash. A new Allis-Chalmers engine, 105 net engine hp, provides plenty of power and handles hydraulic requirements with ease.

Road building and maintenance in Franklin Parish, La., get an assist from a new HD-11 tractor-bulldozer. The unit is at work widening 40 miles of farm-to-market road near Wisner. Later, it will aid with regular maintenance on 1,750 miles of parish road.

Scraping and dirt moving for Don L. Builders, Inc., Kansas City, Mo., this HD-11 Tractor and 7½-yd Allis-Chalmers scraper combination moves 15 yd every sixteen minutes on a 300-yd haul. Operator Ralph Alewel states, "This tractor has plenty of power. I'm running in third gear most of the time. The unit is much more comfortable than any I've been on."

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Your Allis-Chalmers dealer can tell you where to see HD-11's in action in your neighborhood.

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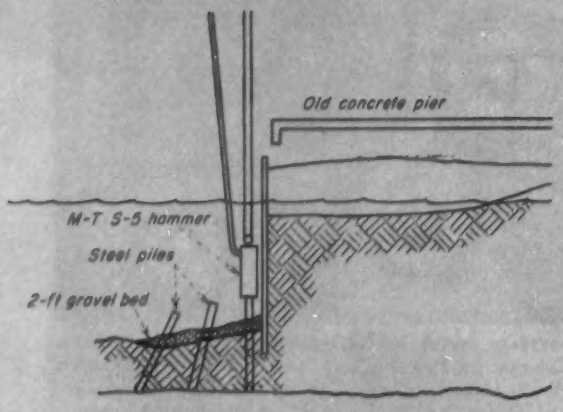
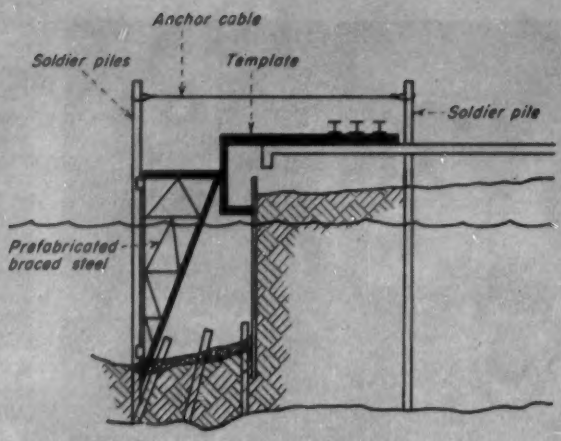


① Driving Piles in Preparation for Gravity Wall



② Placing and Securing Forms

110-Ton Steel Forms Speed Pier Repairs

By ANDREW BORACCI
Associate Editor

POURING a 55-ft-high concrete gravity wall and cantilevering 27 ft of concrete deck around 5,600 ft of ancient pier is a tough job. And when forms can't be braced against anything but the harbor bed it becomes doubly tough. The job requires some unusual forming methods plus specially made 110-ton pre-fabricated steel forms.

Merritt-Chapman & Scott Corp. employs both in the $8 million rehabilitation of piers at the U. S. Army base in Boston, Mass. Tough as the job is, the firm expected the problem with the contract. It was written into the specifications.

The piers were built in 1918. They were reinforced concrete slabs supported on untreated timber piles and solid fill retained by sheet pile bulkheads. Between 1918 and 1935, voracious marine borers found the taste of the wood to their liking and chewed them into near uselessness.

In a hurry-up repair job, the Army drove steel sheet piling through the edge of the concrete deck and capped it with concrete. The piles were stayed with tie rods secured to concrete posts behind the pier's seawall. Interior piles then were repaired, and fill was packed into the pier's underside.

By 1951 the pier again was in danger. This time it was serious. Cracks appeared in the decks and superstructure. To prevent the pier from splitting and falling into the harbor, the Army decided to rebuild it completely.

MC&S's plan — execution of which was turned over to its veteran project manager Jess Comer —is to anchor the outside forms to the harbor bed with steel soldier piles, use the existing sheet piling as inside forms, and tremie the wall concrete. Then, return and install cantilever forms and pour pier extensions. Sounds simple. But the process of building the wall is an unusual bit of harbor construction.

Specially Designed Forms

Special forms first had to be designed to conform to the shape of the 49½-ft high gravity wall which measures 27 ft thick at the bottom and tapers to 8 ft at the top. Special forms also had to be designed for the 27-ft cantilevered deck extension which will encircle the pier. These were designed by MC&S engineers and built by Blaw-Knox.

The forms were delivered to the job in semi-fabricated sections. There, Comer's men finished fabricating them on barges and on the pier's deck. Three sets of wall forms were made. Each set consists of three sections: two panels with faces measuring 49½x38 ft; one panel measuring 49½x28 ft; and two bulkhead forms cut to the shape of the wall 27 ft long at the bottom, 49½ ft high, and 8 ft wide at the top.

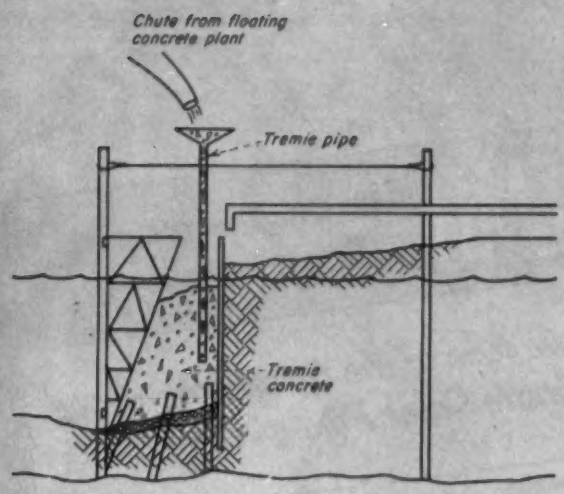
The form faces are welded to truss-type wafers fitted on their outside legs with slide fittings which anchor them to the soldier beams. Two A-shaped brackets 49 ft 5 in. long anchor bulkheads.

Forms for the cantilevered pier extension are built to the lengths of the wall forms. Wall and cantilever form faces are braced against one another by steel struts. These, too, are fitted with flanges to secure to soldier piles. While formwork is under fabrication the harbor bed around the pier is prepared to receive forms.

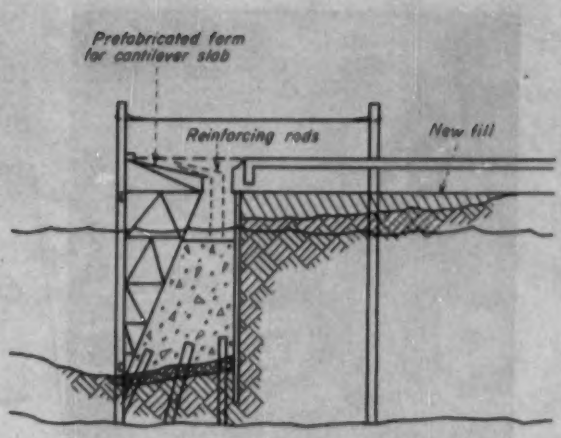
Preparing the Harbor Bed

First step is dredging to blue clay or firm material to prepare a seat for the forms. This is done by clam

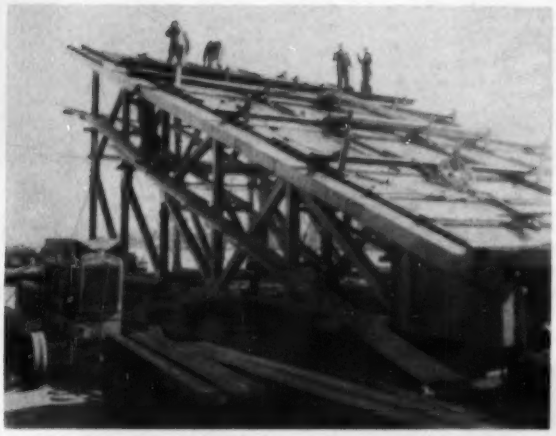
(Continued on page 140)



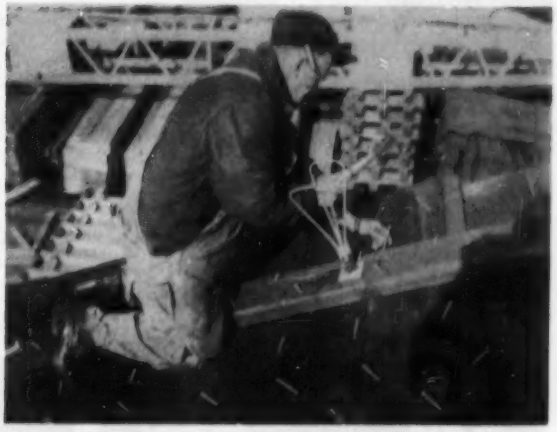
(3) Concreting Wall



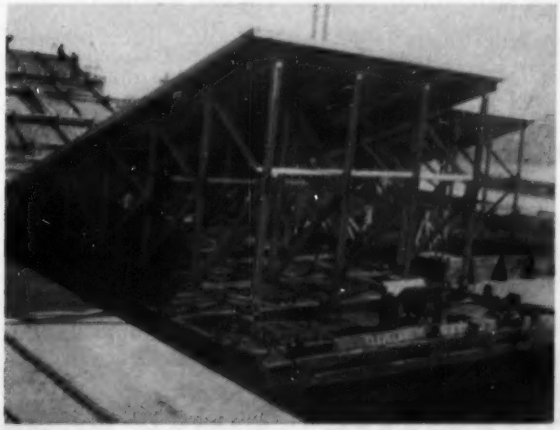
(4) Place and Pour Cantilevered Arch



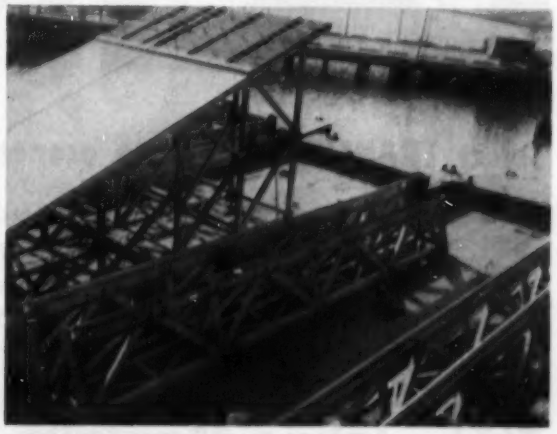
WORKMEN PUT finishing touches to huge prefabricated wall forms.



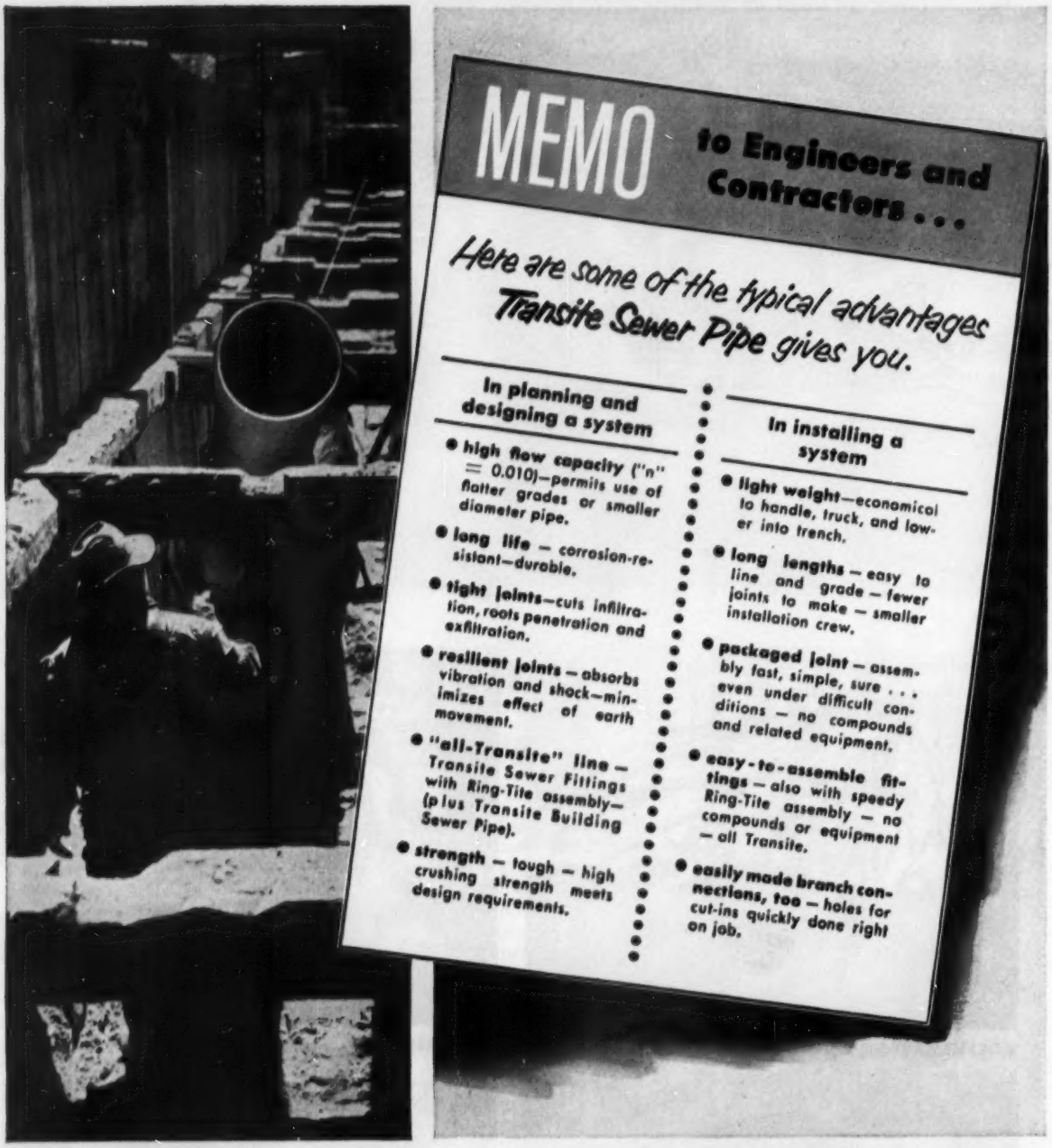
NAILS HELP anchor sheeting to walls after forms are stripped.



CRANE will lift forms from barge and lower them into water.



A-BRACKETS alongside wall forms will be used to brace side forms.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Here are some of the typical advantages Transite Sewer Pipe gives you.
In planning and designing a system
• high flow capacity ("n" = 0.010)—permits use of flatter grades or smaller diameter pipe.
• long life — corrosion-resistant—durable.
• tight joints—cuts infiltration, roots penetration and exfiltration.
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• "all-Transite" line — Transite Sewer Fittings with Ring-Tite assembly—(plus Transite Building Sewer Pipe).
• strength — tough — high crushing strength meets design requirements.
In installing a system
• light weight—economical to handle, truck, and lower into trench.
• long lengths — easy to line and grade — fewer joints to make — smaller installation crew.
• packaged joint — assembly fast, simple, sure . . . even under difficult conditions — no compounds and related equipment.
• easy-to-assemble fittings — also with speedy Ring-Tite assembly — no compounds or equipment — all Transite.
• easily made branch connections, too — holes for cut-ins quickly done right on job.

Select TRANSITE® for more economical, tighter sewerage systems . . .

Whether a new sewerage system is being planned or additions to an existing one are being made . . . engineer and contractor alike will find a combination of qualities in performance-proved Transite Sewer Pipe that will fit their individual needs. They will find this holds true whether the local conditions call for (a) tight joints to protect against root growth and infiltration of ground water or (b) the strength and flow characteristics that mean definite savings in the design stage, during trenching and installation, and in operation as well.

For further information about Transite Sewer Pipe, write for Booklet TR-165A, Johns-Manville, Box 60, New York 16, N.Y.

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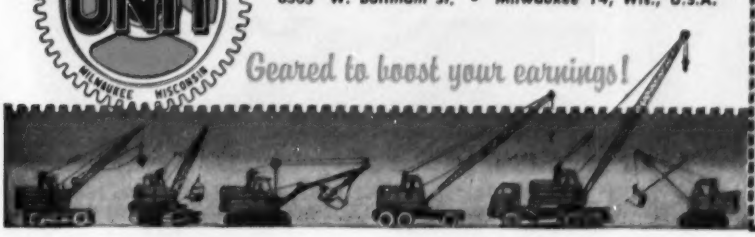
Geared to boost your earnings!



UNIT CRANE & SHOVEL CORP.
Milwaukee 14, Wisconsin

Please send me your new Bulletin on the UNIT CHALLENGER Model 510.

Name.....

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CLAMSHELL DIPS into water alongside pier and rides to bottom where it will discharge load of gravel fill to make wall bed.

SPUD IS PLACED at proper angle to receive anchor pile. Pile tops, raking at various angles, will protrude 5 ft into wall.

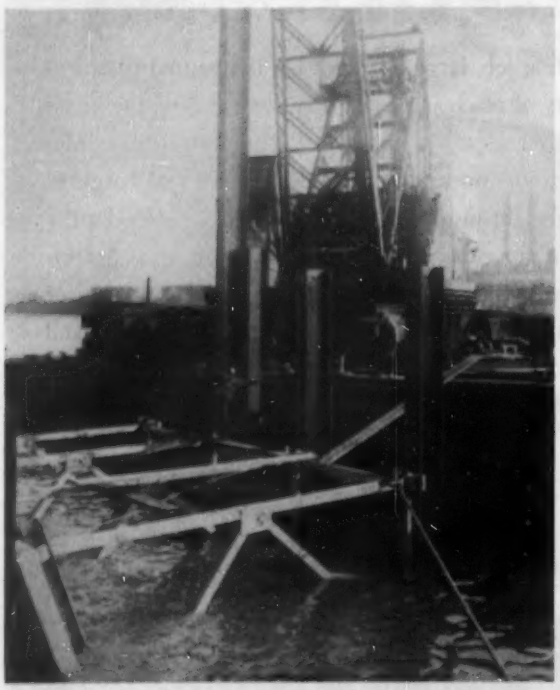
110-TON FORMS . . . **Continued from page 137**

shell with dredging going to approximately 45 ft below mean high water level. Scraping the clam shell several times over the dredged portions smoothes out the rough spots.

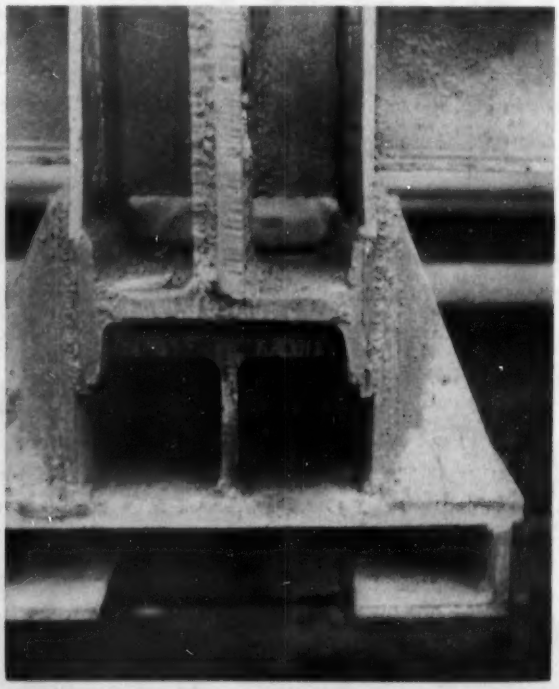
While dredging is under way, the fender system is demolished and removed on the pier's outside. Jackhammers remove the concrete that caps the old sheet piling put there to retain the fill.

To prevent the wall from sinking into the clay Comer puts down a 2-ft layer of gravel over the clay. Delivery of gravel is by railroad cars rolled onto the pier. Gravel is lowered by clam shell and dropped at the bottom. Dropping the gravel close to the bottom prevents it from being dispersed in the water. Again the clam shell is passed over the bottom to smooth out the fill. Driving of anchor piles follows.

MC&S drives a series of 14-in. WF 89-lb piles to anchor the wall

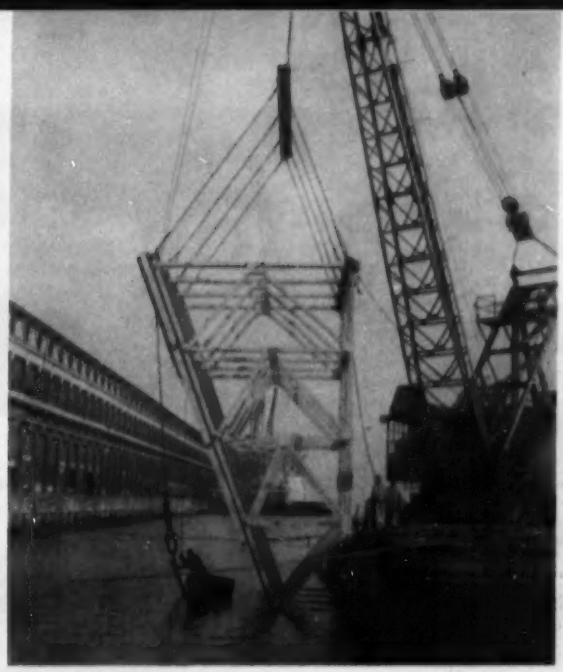


SOLDIER PILE SLIPS easily through specially designed slide bracket. Pile next is driven into harbor bed to anchor form.



SLIDE BRACKET is designed to receive the flanges of the H-piles used to anchor the forms. Two brackets are provided for each pile.

WORKMEN SLIP anchor pile through spud guide. Pile will be driven into harbor bed to prevent concrete wall from slipping.



CRANE LIFTS huge form section from barge and lowers in into the water alongside pier. Form will come to rest on gravel bed.

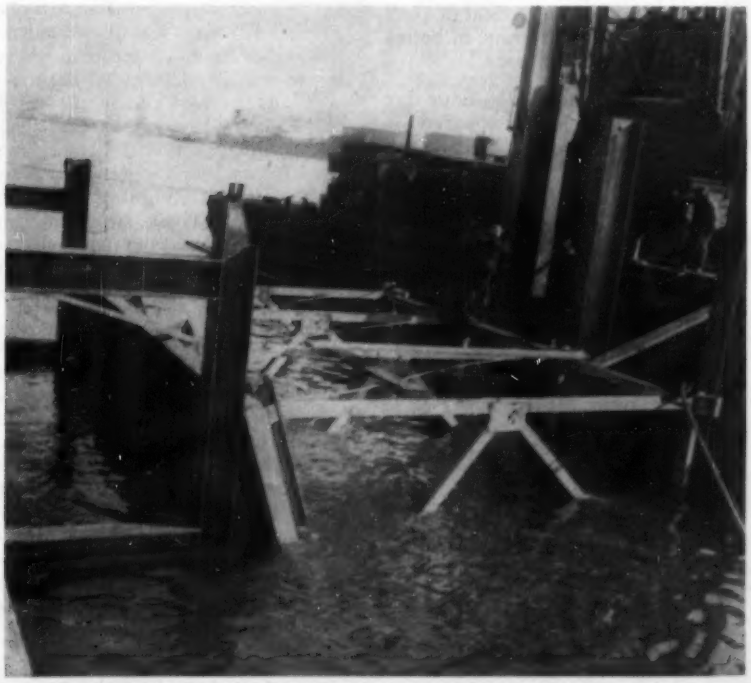
into place and prevent it from walking out on the harbor bottom. A McKiernan-Terry S-5 hammer is used underwater. Pile heads are left protruding 5 ft for embedment in the gravity wall. In spots where a pile gets no penetration, a 30-in. dia hole is bored and a 28-in. dia steel casing slipped into it. A 14-in. WF 193-lb pile is placed in a vertical position inside the casing, and the casing then is tremied full of concrete. Once piles are in place for approximately 300 ft of pier, a section is ready for forming.

Forming

MC&S forms for two 96-ft lengths of wall, leaving an 80-ft space between lengths. Reason for this is to utilize first-poured walls as bulkhead forms for alternate pours. With 60 expected reuses of the forms on the job, this is expected to prove a considerable labor-saving method.

Comer uses a template set over the pier deck and weighted down with beams to space form tops

(Continued on page 144)



TEMPLATE SPACES form correct distance from pier. Template is made of welded sections of H-beams and held down by other sections of beams. It is moved just before concrete pour.

LAST PILE is set in place and is then ready for special bulkhead form alongside.

WEIGHT OF TYPICAL BATCH:

Portland cement . . 831 lbs.
Natural cement . . . 143 lbs.
Sand . . . . . 1222 lbs.
1-inch stone . . . . 1448 lbs.
2½-inch stone . . 1767 lbs.

145 BATCHES AN HOUR *speed*

Paving contractor on a large air base in one of the central U. S. states needed a fast, dependable batch plant that would turn out approximately 130 batches an hour. To meet production requirements, a fully-automatic Johnson one-stop plant was installed on a rail siding, a short haul from the immediate paving area.

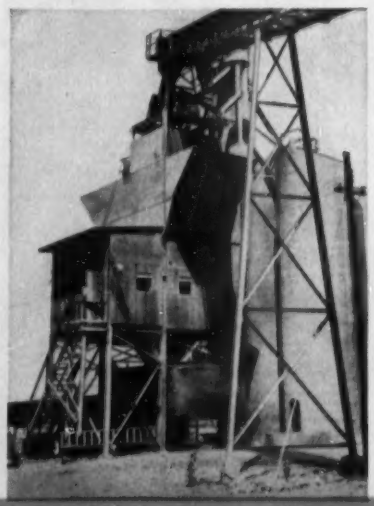
Supplied by rail, truck

Bulk cement, delivered by rail car, was stored at the plant in three Johnson 825-barrel silos. Sand and stone, delivered by truck and rail, were fed into three Johnson auxiliary storage bins by a traveling stacker. From there, aggregates were fed to the batch plant by inclined conveyor.

Kept two 34-E pavers busy

With this efficient material handling system, the 5-compartment bin on top of the batch plant was stocked continually. The plant accurately weighed out aggregates and cement ahead of heaviest schedules — kept two 34-E pavers busy full time pouring 12-inch slab. While the plant's top-speed potential of 180 batches an hour could not be fully utilized due to normal job delays, this *reserve production capacity* easily assured an average of 130 batches an hour. In fact, during one 11½-hour period of peak operation, it weighed out a total of 1669 batches. That's an average of better than 145 batches an hour.

Actual pour for the 11½-hour day was 2300 cubic yards of concrete — or 200 cubic yards an hour. Each batch weighed 1.38 cubic yards, and consisted of five materials — sand, two sizes of aggregates, and two types of cement.



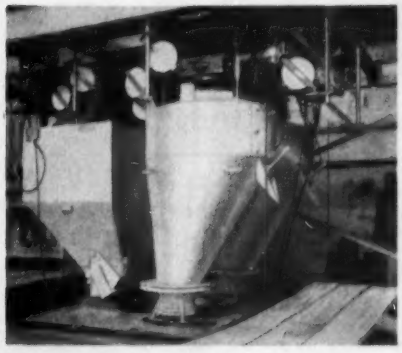
20 second batch-time

On this one-stop operation, average batcher fill-time was 10 seconds — discharge time, 10 seconds. Automatic control maintained high output, and assured pin-point weighing accuracy of every batch. A separate fully-automatic batcher was used for each of the aggregates and cement — all weighing up at the same time. These single-material Johnson batchers operate on electro-pneumatic control. Fill valves and discharge gates are automatic air-ram operated.

Johnson batch plants also can be arranged for two- or three-stop charging. Investigate the possibilities of increasing concrete production on your highway and airport paving. Get the complete story on Johnson automatic batch plants with multiple arrangements of single-material batchers, and one-man push-button control. All sizes, all types. See your Johnson distributor, or write us for latest batch plant catalog.

JOHNSON *automatic* BATCH PLANTS

paving job



Multiple batch selections

In Johnson single-material plants for roadbuilders' use, dial scale with electric cut-off switch is usually used. When more than one type of batch is required, Johnson single-material batchers can be equipped with mix selector and recorder for 12 different batches — all controlled from central operator's position. (Each aggregate batcher can be equipped with moisture compensator which automatically gives dry weight.) Up to 120 batch selections are available on Johnson automatic concrete plants for dams and commercial ready-mix installations.

C. S. JOHNSON COMPANY
CHAMPAIGN, ILL. *(Koehring Subsidiary)*

Truck-loading with 16-S concrete mixer

Producing concrete for curbs and gutters, Kwik-Mix 16-S loads batch into trucks from ground-level. Tower loader gives 9 ft.-2 in. discharge height. Bucket holds full batch, is powered by mixer engine, dumps automatically at top of tower. Also available on 11-S Dandie®, and Kwik-Mix bituminous mixers for stockpiling and loading into trucks, overhead hoppers and forms. Ask Kwik-Mix distributor for more information, or write us.

KWIK-MIX• Port Washington, Wis.
(Koehring Subsidiary)

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Next job is only minutes away with this rubber-tired Trenchmobile®. It runs from job-to-job over city streets, highways or cross-country at 12.6 m.p.h. Works fast, too. Digs up to 14½ feet per minute, 8 to 16 inches wide, 5 feet deep. Sloping ladder boom undercuts walks, curbs, gutters, makes vertical set-ins. Hydraulic-control backfill blade optional. Also check big Parsons line of crawler-mounted wheel-type and ladder-type Trenchliners®.

PARSONS • Newton, Iowa
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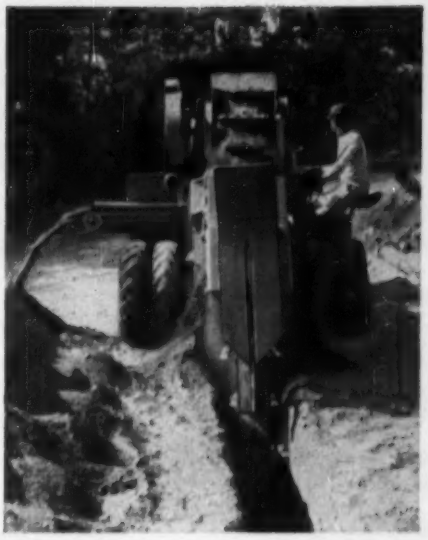


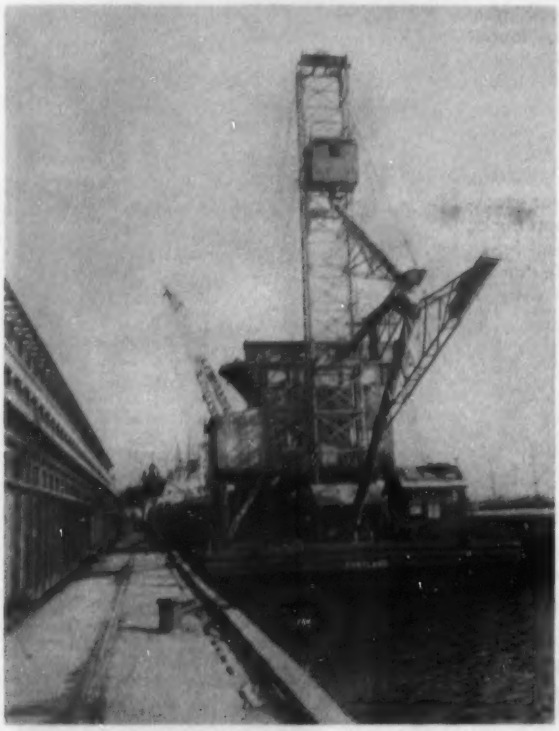
No room to turn here— and no need to turn

Shuttling back and forth on overhead trestles, in tunnels, on narrow haul roads, Koehring 6-yard Dumptor® travels round trip without turning. It has the same speeds forward and reverse — operates with equal ease in either direction. Every turn eliminated saves 15 seconds, cuts cycle-time. You'll also like its one-second gravity-dump (no body-hoist), 24% gradeability, and other heavy-duty advantages for off-road haul.

KOEHRING Company
Milwaukee 16, Wisconsin
V45

110-TON FORMS . . .

Continued from page 141



CONCRETING IS DONE with help of M-C&S's huge floating concrete plant, Cortland. Plant is capable of turning out 100 cu yd hourly. Most of concreting will be tremie.

PIER REQUIRING protective gravity wall is a handy storage platform. Wood piles shown will be used for wall's fender system. Form fabricating is done on pier and on barges.

the correct 2-ft distance from the pier. The template is made from the same size H-beams as the piling.

A crane then lifts the first section of form from a barge and lowers it into place against the template. The crane continues to support the form while the men set 36-in. WF 145-lb soldier piles into the form's slide fittings and drive the piles into the harbor bed. The remaining 28-ft and 34-ft forms of the set are placed the same way.

An additional anchorage is provided from inside the pier. A hole is chopped through the deck and a pile driven deep into the harbor bed. The pile gets no bearing or support from the pier itself.

The pile is driven at about the center line of each form section. Comer then runs steel cables from the four soldier piles of each panel to the interior pier anchor. The second 96-ft set of forms is placed 80 ft away in the same manner.

Cranes then lift the special bulkhead sections and set them into the open ends of the forms. Another crane sets the A-brackets into place, and additional soldier piles are driven to hold them in place. Forms then are ready for concrete.

Concreting

MC&S tremies the wall section up to its high water mark with 3,500-psi concrete. This leaves about 7 ft of wall and the cantilevered portion yet to be poured. The pour is disrupted for two reasons: (1) It gives workmen a chance to restore fill under the old pier; (2) It permits setting reinforcing steel for the cantilevered section.

Anchor bolts and a key are provided in the wall section to hold the cantilever form. The form's unusual triangular design makes slab and wall sections self-bracing.

Additional reinforcing then is placed, and the slab and wall sections are poured. Once concrete is set the forms are ready for stripping.

Stripping is simply a matter of inverting the pile hammer and pulling the soldier piles. Cables securing the forms to the soldier pile within the pier area are removed and the wall form and cantilever forms are pulled free. Wall sections next have to be joined.

Joining Wall Sections

To pour the 80-ft length between the two 94-ft lengths, Comer places the forms as he did with the first wall sections. The wall ends serve as forms for the intermediate pour so no bulkhead sections are needed. Pouring procedure remains the same. The wall process will be repeated some 60 times in the course of the job.

Other work at the pier includes relocating pier equipment and cranes, patching cracks, and installing new concrete slabs where needed. Comer works under the jurisdiction of Charles A. Richardson, vice president in charge of Merritt-Chapman & Scott Corp's Boston office. Assisting Comer in supervisory capacities are David Kassap, project engineer, and Louis Lake, superintendent.

NEW...

Bonus Powered too!

NEW

124 Net Engine Horsepower. In International Drott Machines, Engine develops 134 Net Horsepower.

182 Series

TD 18

TD-18 diesel (series 182) delivers 103 drawbar horsepower, with weight of 29,050 pounds (without equipment). All-weather electric starting, standard equipment. "New look" visibility, operating ease never before available. New heavy-duty, swinging-door type radiator guard is "standard"—for carrying heavy front-mounted equipment. Gives big tractor performance in pioneering under roughest conditions. Powers 3-yard International Drott Skid-Shovel, anywhere.

No costly delay from a "killed" or cold engine—you start fast! Famous International *gasoline-conversion* diesel starting—*actual* "in-seat" starting—is *standard equipment* on this new crawler line. With "push-button" ease, you get seconds-fast starting, whether the engine is cold, or stopped! And you're on the job seconds-fast, when minutes are dollars.

Cermetallic Engine Clutch Facings Save power, defy heat, prolong life! Uncomplicated, *familiar-to-all* engine clutch design of these new crawlers have *power-holding, heat-defying, long-lasting* Cermetallic facings. These facings reduce lever-pull up to 50%, provide amazing heat immunity, add service freedom, cut upkeep!

New . . . 500-hour lube intervals with new metal-to-metal, track roller seals! You save the time and expense of frequent inspections or lubrications, with the new *full-floating*, cartridge-type, track roller seals provided on the TD-24, TD-18, and TD-14. These precision-lapped, metal-to-metal seals are so effective they give you safe 500-hour intervals between roller lubrications!

Steps up a size... in job range and capacity!

50 Net Engine Horsepower. In International Drott Machines, Engine develops 55 Net Horsepower.

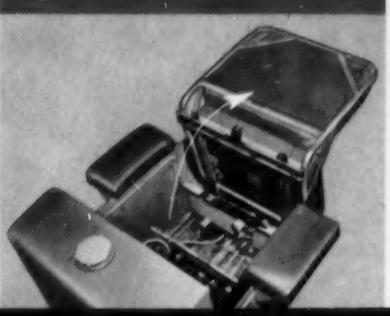
61 Series

TD 6

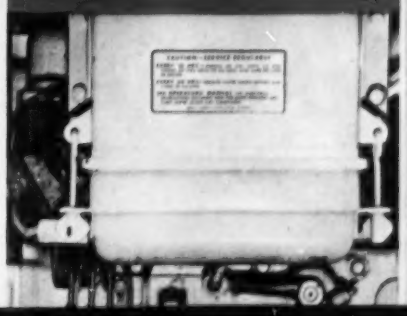
TD-6 diesel (series 61), 41.5 drawbar hp, up 23%! Steps up a whole size in work capacity and earning ability. Operating weight (5-roller model), without equipment, 8,890 pounds. Powers 1-yard International Drott Skid-Shovel or Four-In-One; serves as clean-up dozer unit on any-sized contract; versatility and low operating cost to do many sizes of jobs for every size of contractor.

Full-view, one-glance panel saves time—cuts effort! One quick glance at this new full-view panel, with centralized instrument grouping, gives the operator the instant check-up, to assure that lubrication, generator, and cooling system are "perking" for full production!

New Fold-over Seat Aids Fast, Centralized Servicing! New fold-over seat of the TD-6 and TD-9 models allows operator to give you the time and convenience advantages of centralized steering clutch assembly servicing. Lubricant fittings are conveniently grouped and fully accessible!



Thorough air filtration assured by new under-hood cleaner! Instead of being "in your lap," or a knee-bumping obstruction, air cleaners of the new International crawlers are side-mounted—for easy accessibility, yet out of the way. They have big capacity and high efficiency, too, for positive air filtration!



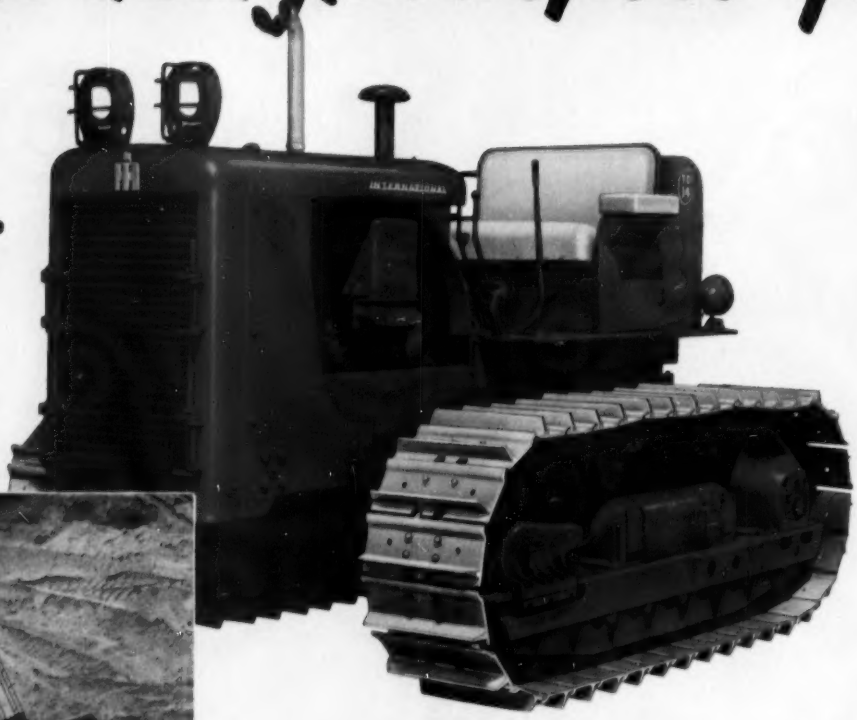
International® Crawlers gi

plus new design to speed yo

95 Net Engine Horsepower.

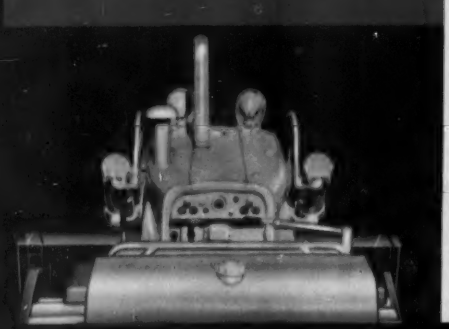
142 Series

TD 14

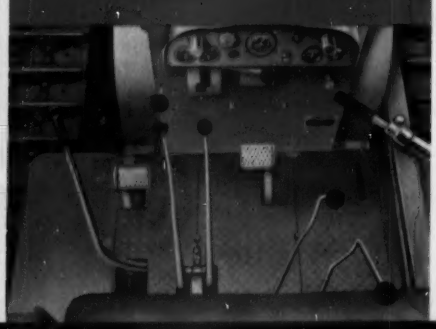


TD-14 (series 142), 78.5 drawbar hp; weighs 21,095 pounds (without equipment). Features "new look" engineering, job-speeding visibility, new equipment-carrying and operating strength. All-weather electric starting, standard equipment. It's a fast, responsive, big-capacity dozing tractor. Powers 2¼ cu. yd. International Drott Skid-Shovel or Four-In-One; 15-ton capacity Superior Pipe-Boom; other similar-sized equipment.

Control Tower Visibility adds operating efficiency! See how new International crawlers are streamlined for complete job-control visibility. Seat is amply high to provide full view of equipment, terrain, and variations requiring operator action, to maintain efficiency.



Clean, safe deck cleared for action! Look down on that safe, clean, flush deck—a platform for full production. The wide, man-size seat is fully-adjustable; foam rubber padded. Instruments centralized for one-glance check-up! Even a cigarette lighter is provided, to prevent needless stops!



Pressurized Closed Cooling System for Positive Performance Protection! New pressurized cooling systems provide fast warm-up under thermostatic control—and positive, *ideal temperature control* with forced circulation through full-length jackets. That aids clean combustion, guards oil film strength, protects performance. Radiator core assembly is easily-removable, without disturbing radiator guard or mounted equipment.

give you Bonus horsepower—your jobs, control your costs!

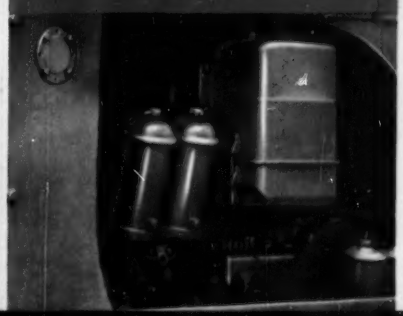
66 Net Engine Horsepower. In International Drott Machines, Engine develops 71 Net Horsepower.

91 Series

TD 9

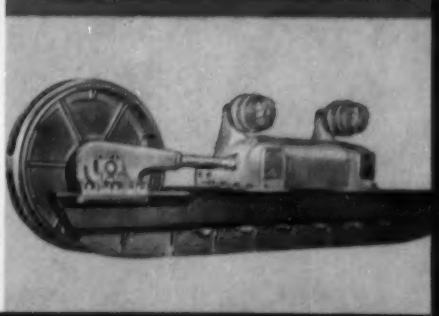
TD-9 diesel, (series 91), delivers 54.5 drawbar hp—up 32%. Operating weight (5-roller model), without equipment, 12,000 pounds. Now up in a new heavy-duty job range. New power is backed by new power train and track frame strength, new operating and servicing ease. Powers International Drott 1½ cu. yd. Skid-Shovel and other equipment requiring similar power.

480-hr. full-flow lube oil filters guard bearings, cut upkeep! Every drop of oil on its way to lubricate moving engine parts must pass through these new abrasive-trapping micron-type filters—with the capacity, strength, and efficiency to give 480 hours of wear-fighting, upkeep-cutting duty!



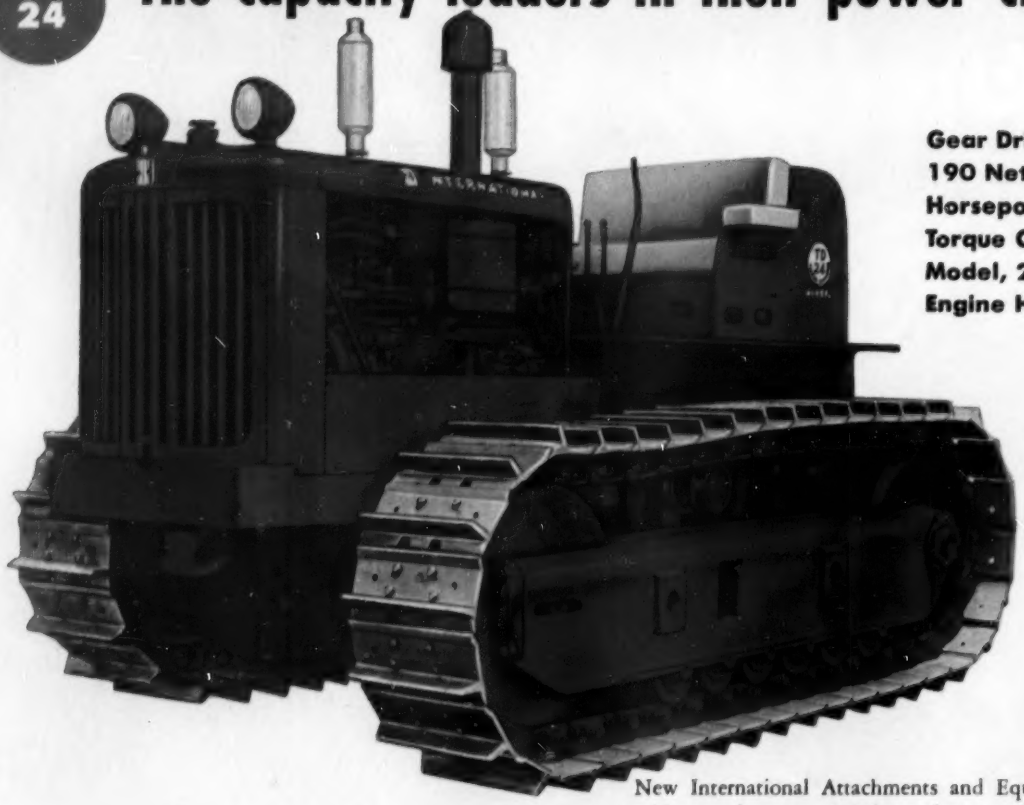
Hydraulic Power Steering Inspires Operator Cooperation! New hydraulic power steering of the TD-14 and TD-18 cuts operator fatigue—and along with the other big effort-saving advantages, makes it easier than ever to deliver full-capacity production! TD-6 and TD-9 have spring boosters to lighten the operator's job.

"Bridge-strong" track frames for "slam-bang" conditions! You are looking at the strongest track frame in the industry for crawlers of TD-18 and TD-14 size! Heavy steel box-section beams, weld-joined to heavy stress-relieved steel plates—and rigidly gusset-braced—they're your foundation for record-making "rough-and-tumble" performance!



TD 24

The capacity leaders in their power class



Gear Drive Model, 190 Net Engine Horsepower
Torque Converter Model, 200 Net Engine Horsepower

Massive—with 43,080 pounds of rock-dozing, scraper-pushing brawn (7-roller torque converter model)*—the TD-24 can give them all a lesson in operating ease, big capacity, and positive load control! Has instant high-low range and exclusive Planet Power steering to give you its tremendous *pushing*, *pulling*, and *lifting* power on any terrain—with responsiveness not available elsewhere! *Live power on both tracks, on every turn!* Backed by equipment engineered to match its strength and power!

*Gear Drive 7-roller model weighs 42,780.

New International Attachments and Equipment team with new bonus-powered crawlers to give you high-producing performance packages: 42 new Bulldozers, to fit your needs exactly . . . 4 new Drott Loaders, 1 to 3-cubic yard capacity . . . 4 new Superior® Pipe-Booms, 8 to 55-ton capacity; 3 job-proved PCU'S! . . . **Measure . . . compare . . . prove to yourself . . . new bonus-powered International crawler tractors beat anything else on tracks! Try this turnpike-paced new power for capacity, operator preference, profit potential. Ask your International Industrial Power Distributor for a bonus-powered demonstration *to your specifications!***

INTERNATIONAL HARVESTER

International Industrial Power

INTERNATIONAL HARVESTER COMPANY, 180 N. Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Tractor and Rubber-tired Loaders . . . Diesel and Carbureted Engines . . . Motor Trucks.

SAVES ENGINES!

Use Sinclair SUPER TENOL® to save your Diesels from the harmful and costly effects of *severe* operating conditions. Sinclair SUPER TENOL is specially engineered for the tougher jobs! It saves engines by combating the effects of high temperature, over-loading, and continuous stop-and-go service. It helps eliminate deposits of varnish, carbon and sludge that impair engine efficiency. Experience shows that Sinclair SUPER TENOL keeps equipment on the job longer . . . with less wear and fewer repairs!

Refill now with Sinclair SUPER TENOL. Contact your local Sinclair Representative or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N.Y. *There's no obligation.*

SINCLAIR SUPER TENOL MOTOR OIL

"I'm burning these ten-spots," said Hodge,
Burning bills in his big truck garage,
"To show how we lose,
When a new truck we choose,
Without first having checked on Dodge!"

QUICK QUIZ FOR TRUCK BUYERS

Try this quick quiz before you buy your next truck—and you'll get a better truck for your money:

Q. **What truck line offers you *today's lowest prices* on such popular models as the ½-ton panel, the 1-ton express, and the 1½- and 2-ton stakes?**

Q. **Which truck line has the largest cabs?**

Q. **Which has the greatest driver visibility?**

Q. **Which has the shortest turning radius?**

The answer is "Dodge"—leader for the last 39 years. And this year "Dodge" is the answer to virtually every question you can ask that has to do with lower cost haulage or delivery.

You'll find Dodge trucks are the best answer, too, on price. For Dodge trucks are priced so competitively that no one can beat your Dodge dealer's deal.

When time comes to buy your next truck—get the answers that will lead you straight to today's best truck value—Dodge.

DODGE
Job Rated
TRUCKS
WITH THE *FORWARD* LOOK

Get the Dodge Dealer's Deal Before You Decide

PAVING...How to Get the Best Results

8. Placing And Finishing Concrete

By L. M. ARMS, Manager,
Highways & Municipal Bureau
Portland Cement Association

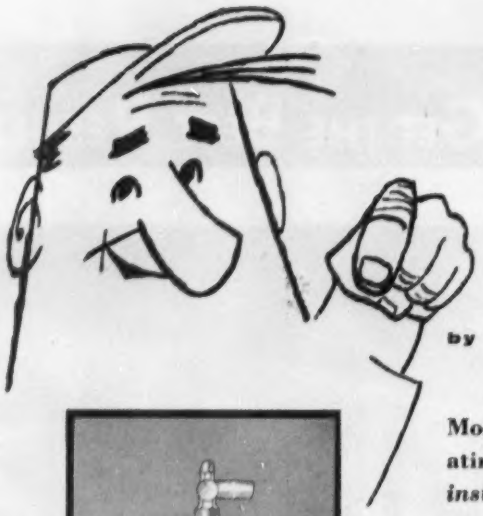
CONCRETE PAVEMENT ordinarily is placed between side forms, usually made of steel, which confine the plastic concrete and provide a track on which the finishing equipment travels. Recently, new equipment has been developed to finish the pavement between traveling forms that move with the machines. Thus far, this method has been used mainly for secondary roads and concrete bases.

In the conventional method of constructing concrete pavements, concrete is dumped on the subgrade, spread by hand or machine, consolidated and finished by a finishing machine, floated with a mechanical or manual longitudinal float, straight-edged, belted, and given a final finish.

Spreading Concrete

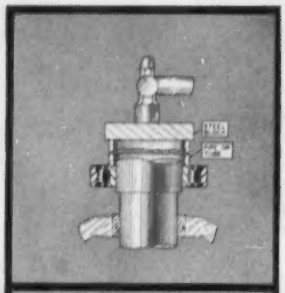
When concrete is mixed on the project in a paving mixer, it is distributed more or less uniformly over the subgrade by changing the angle of the boom and the distance out from the paver at which the bucket is emptied. When ready-mixed concrete is used, it is almost always discharged by chutes that can be rotated to spread the concrete uniformly over the subgrade.

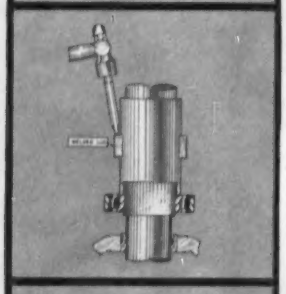
A skillful operator spreads the concrete over the subgrade in amounts that provide slightly more than is needed to fill the forms. Concrete should not be deposited in a single large amount and then spread around. This tends to cause



How to press a Hyatt Bearing off or on

by HY WHEELER, the sage of the socket wrench





Most bearing damage results from improper operating conditions, or from *improper handling during installation and removal.* A little extra care in pressing bearings on or off may save a lot of time and money in the long run!

The best thing to use is an *arbor press* or a *bearing puller.* If neither is available, or can't be used, you can drive the bearing with a hammer—but *be careful to avoid injury to yourself or damage to the bearing.* REMEMBER:

1. Always direct the force *against the face of the press-fitted race* (usually the rotating one) to avoid damage to separators, rollers, etc.

2. Never hammer directly on races or separators and never use a wood or soft metal mallet; chips or splinters may get into the bearing.

3. In driving, use many smart, quick taps alternately on opposite sides to prevent the race from cocking and harming the shaft.

4. *Make sure your hands, tools and surroundings are clean—dirt quickly ruins bearings.*

AND ALWAYS REPLACE A HYATT WITH ANOTHER HYATT TO ASSURE PERFECT FIT AND PERFORMANCE. REMEMBER, WHEN IT COMES TO QUALITY...

there's no substitute for...

AVAILABLE THROUGH UNITED MOTORS DISTRIBUTORS

GM PARTS SALES

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

PAVING...

Continued from page 153

segregation, and the extra consolidation of concrete in the bottom of each pile may induce an unevenness in the surface that cannot be eliminated. Results are most satisfactory—and the least manipulation of the concrete is required—when concrete is deposited in such a manner that only a slight excess is carried ahead of the finishing equipment at any time.

Prior to World War II, spreading was always done by "puddlers," who stand in the concrete and distribute it by shovels. This method is still used sometimes, but generally most large highway paving jobs now are highly mechanized. When puddlers are used, constant vigilance on the part of inspectors is necessary to see that the puddlers do not track mud into the plastic mass.

The use of mechanical spreaders has increased rapidly since the end of the war. They generally consist of a blade or screw that distributes the concrete laterally across the subgrade and strikes it off to a predetermined elevation. The ability of spreaders to handle masses of stiff concrete should not lead to improper depositing of the material on the subgrade. That might make finishing operations more difficult.

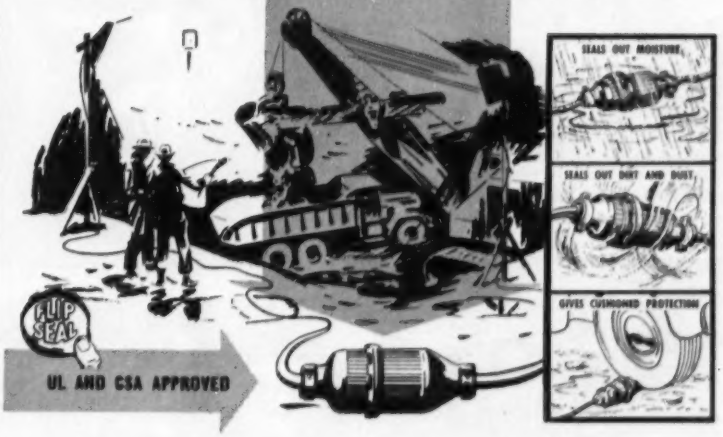
Blade-type spreaders are equipped with a blade or paddle which moves across the pavement to spread the concrete evenly over the entire width. The elevation of the bottom of the blade is readily adjustable from about 2 in. below the top of the forms to 3 in. above them by means of a hand crank. Behind the blade is a strike-off that can be raised and lowered hydraulically from 3 in. below the form tops to 4 in. above them.

The screw-type spreader utilizes a transverse reversible screw for distributing the concrete across the subgrade. This is followed by a strike-off. Both screw and strike-off can be adjusted hydraulically to leave the concrete at the proper elevation for finishing.

Where mesh reinforcement is specified, the concrete is struck off at the required elevation. Then the mesh is installed, and covered with a second layer of concrete. Good bond between these two layers is highly important. No mud or dust should be permitted to accumulate on the fresh concrete during placement of the mesh. And the top layer of concrete should be

DON'T DO THIS. When concrete is discharged in piles along the center line, the spreader must move it a greater distance, and the risk of segregation is increased.

FLEXIBLE FLIP-OVER WATER PROOF CONNECTOR
CUTS DOWN TIME AND REPLACEMENT COST



Flip Seal . . . the electrical connector with the weatherproof seal . . . offers on-the-job protection never before possible. Here is the connector you can use with confidence in rain . . . where there is water lying on the ground . . . where dust, dirt, or metal particles are prevalent . . . where there is the possibility of crushing by machinery or trucks.

Heavy duty construction plus a locked seal which only extraordinary stress and strain will break are the features which keep Flip Seal on the job when ordinary connectors fail. The flexible lip overlapping the male cap of Flip Seal . . . as well as the seals at both cable entrances . . . stop moisture, dust, dirt, and metal particles from entering. Flip Seal's construction and the overlapping lip also give cushioned protection from crushing, shock, or abuse.

Cut down time and replacement costs due to faulty connectors . . . specify Flip Seal! Available in rubber and neoprene in a wide variety of blade arrangements. For additional details, see your electrical wholesaler or write: Rodale Manufacturing Company, Inc., Dept. CM1, Emmaus, Pennsylvania.

Rodale MANUFACTURING CO., INC. EMMAUS, PENNA.

WIRE MESH AND TIEBARS go down over the first layer of concrete. Workmen in foreground are fixing tiebars to the mesh ahead of spreader laying second lift of concrete.

PAVING...
Continued

placed before the bottom layer loses its plasticity.

Care must be exercised in placement of the mesh reinforcement. Bent or twisted sheets should never be used. The location of contraction joints should be plainly marked so that gaps may be left between sheets. These markings should remain after placement of the top layer of concrete so that the joints will be placed or cut at a point where no mesh will cross them.

Where pavements are placed two lanes at a time, a deformed metal longitudinal center joint that projects above the top of the mesh is used frequently. To allow for this metal joint, either type of mechanical spreader can be equipped with a strike-off with a notch into which the joint can project. The blade-type of spreader is provided with a hump in the guide track that raises the spreading blade as it passes the center-line. The screw-type machine is provided with two transverse screws, one for each half of the slab, separated by a few inches at the center-line. These features prevent the metal joint from interfering with the operation of either type of machine.

Gages on both types of spreaders indicate the elevation of the blade, or screw, and the strike-off in relation to the top of the forms. These gages are clearly visible to the operator and enable him to set the machine to strike off the concrete at the proper elevation for installation of mesh reinforcement and final finishing. They also enable him to raise the blade or screw and strike-off sufficiently to clear any transverse joints. Before a spreader is used on any project, the gage should be checked to make sure that it reads zero when the bottom of the strike-off is exactly even with the top of the forms.

Either type concrete spreader can be equipped with vibrating pans behind the strike-off. The pans should be used only when the mix is designed for this type of finishing. When used, they should be in operation only during the forward motion of the equipment during final strike-off and should be shut off immediately when the machine is stopped. Failure to use vibration during the final strike-off of stiff, harsh mixes designed for vibratory finishing will result in unsatisfactory finishing.

(Continued on page 162)

KOHLER ENGINES
4-CYCLE • AIR-COOLED

K90.....2.5 to 3.6 H.P.
K160.....3.6 to 6.6 H.P.
K330.....7 to 12 H.P.
K660 (2 cylinder opposed) 12 to 26 H.P.

Modern design, air-cooled Kohler Engines in sizes from 2.5 to 26 H.P. offer a power range to fit all applications requiring a reliable and economical power source.

Kohler branch offices are located in sixteen principal cities. Sales and service distributors, throughout the country, have parts available, are ready to assist you in selecting a Kohler Engine best suited for your requirements. Write for information.

High-voltage magneto insures quick, all-weather starting. Efficient cooling at all operating temperatures and speeds.

Kohler Co., Kohler, Wisconsin • Established 1873
KOHLER OF KOHLER
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Torque Converter power-packages on three cranes

save $60.00 a day in fuel costs alone!

Close-up of Caterpillar D315 Diesel Engine, driving through a Twin Disc Model CF Torque Converter. This powerful combination is used by the Valentine-Clark Corporation of St. Paul, Minn., to power their Link-Belt Crane, shown below.

A Twin Disc Torque Converter, on each of three cranes, is saving the Valentine-Clark Corporation of St. Paul, Minn., $20 a day in fuel costs alone—or a total of $60 for all three.

This company chemically treats poles to prevent destruction by weather and insects. Logs are shipped in from the West Coast, debarked and then chemically treated. The three cranes are used to unload the logs into treating pits, and to reload them for shipment.

This equipment includes one Link-Belt and two American Hoist & Derrick Cranes—all of which are equipped with Caterpillar D315 Diesel Engines, driving through Twin Disc Model CF Torque Converters.

Each of the cranes has been converted from steam power, and since switching to the powerful diesel engine-torque converter combination, several advantages have been realized. According to Lawrence Martin, Superintendent of Valentine-Clark, "In addition to our $20 a day saving in fuel—*per crane*, we've *increased* production more than 20%. We've also *decreased* labor costs in eliminating time consumed to fire boilers, and to make water stops."

The next time you repower or purchase new equipment—*specify a Twin Disc Torque Converter* for a smoother, easier, more flexible flow of power (up to 6:1 multiplication) and for longer equipment life through cushioning of shock loads. *Your* production will *increase* . . . your costs will *decrease*. Contact your engine dealer for more information. Twin Disc Clutch Company, Racine, Wisconsin, Hydraulic Division, Rockford, Illinois.

TWIN DISC

TWIN DISC

Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • TULSA

S-18 "EUC" SCRAPER

This new Euclid S-18 incorporates all of the advanced design features that have made "Euc" Scrapers the fastest growing line in the industry. With hydraulic lever action providing positive, independent control of bowl, apron and ejector, expense and down time for cable replacement is eliminated. Torqmatic Drive, NoSpin differential and rugged construction make the S-18 suitable for the toughest jobs and work with big pusher tractors. The low, wide scraper bowl, with adjustable 4-section cutting blade, assures efficient loading in any material. All major components are readily accessible . . . a feature that really pays off in more work-ability and low maintenance cost . . . one of the reasons why *Euclids are your best investment.*

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

Maneuverability is exceptional in spite of the size and capacity of the S-18. The full hydraulic power steering and good hitch design permit non-stop turns in only 36'. Here an S-18 makes a quick turn after spreading its load on a highway relocation job in Wisconsin.

The tremendous power of the S-18 with independent control of all scraper operations and the low, wide bowl provided fast loading in the loose sand of this Wisconsin airport job. Euclid's four section cutting blade, with each section adjustable, reversible and identical, cuts maintenance cost and assures the most efficient loading in any material.

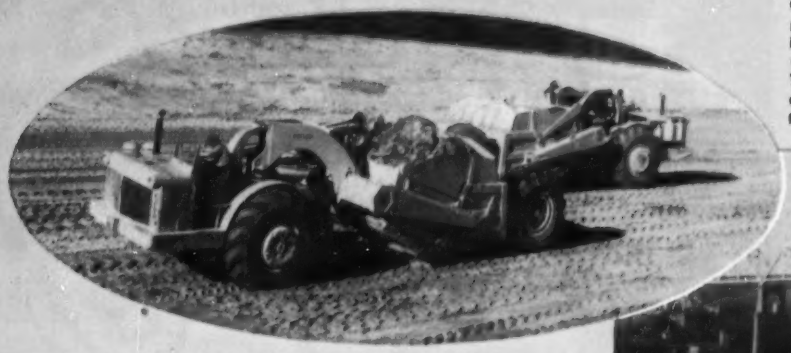
High apron lift and independent control of all scraper operations facilitates dumping big loads. On this air base grading work in Kansas, the fast dumping, traction and speed of the S-18 enabled the contractor to maintain high production at low cost. Short overhang of the engine gives better stability in rough going.

Better Accessibility means More Work-ability

HAS THE VERSATILITY NEEDED FOR ALL KINDS OF JOBS

SURE, SMOOTH POWER & TRACTION

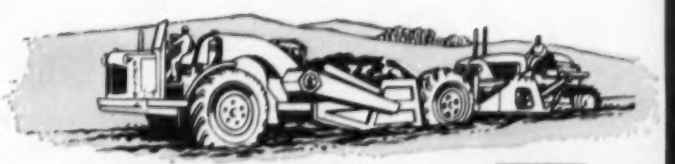
300 h.p. engine . . . Torqmatic Drive . . . 27.00 x 33 tires with 33.5 x 33 optional . . . 18 yds. struck capacity . . . 21 yds. heaped at 3:1 slope and 25 yds. at 1:1 . . . NoSpin differential . . . full hydraulic steering . . . non-stop 180° turns in only 36 feet . . . hydraulically controlled lever action of bowl, apron and ejector . . . four section reversible cutting blade . . . built to work with the biggest pusher tractors on the toughest jobs.



Grading this plant site on the Tennessee River proved the outstanding performance of the S-18 in difficult material. Heaped loads of heavy clay were picked up, hauled and spread in a hurry. The 300 h.p. engine, big tires, Torqmatic Drive and NoSpin differential pay off in better traction, flotation and work-ability.

Coming and going the S-18 cuts cycle time. The Torqmatic Drive and 300 h.p. engine permit shifting under full engine power—provide power and speed to move big loads fast. On this North Carolina highway job top extensions were used to increase bowl capacity—loads of 25 yds. and more were moved from borrow pit to fill at high speed.

COMPARE *the cost-cutting features of "Euc" Scrapers with your present equipment. Your Euclid dealer will be glad to supply information on the complete line—from 7 to 18 yd. struck capacities.*



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Use this symbol of
outstanding steel
warehouse service–as your
guide to qualified personnel,
diversified stocks, complete
processing, prompt delivery
...your dependable J & L Warehouse

The Department Store of Steel

CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HAMMOND • INDIANAPOLIS • LANCASTER • LOUISVILLE • MEMPHIS • NASHVILLE • NEW ORLEANS • NEW YORK • PITTSBURGH

PAVING...

Continued from page 156

Just as the mixer operator should make sure that a slight excess of concrete is deposited on the subgrade, so should the spreader operator set the strike-off to leave sufficient concrete for the finishing operations.

Consolidation and Finishing

Following spreading operations, a machine finishes the concrete. These machines consist of two transverse screeds, and, sometimes, vibratory pads, tubes, or tamping bars.

SPUD-TYPE VIBRATORS help compact heavy-duty airport pavements. Here they are inserted while the carriage is stationary, but sometimes the carriage moves while the vibrators are in the concrete.

Principal purpose of the front screed of these machines is to *compact* the concrete. In order to achieve proper compaction, it is necessary that a fairly uniform head of concrete—4 to 8 in.—be carried ahead of the screed. Also, to aid in compaction the screed should have a slight tilt, with the front edge higher than the back. The exact tilt that will give the best results with a particular mix must be worked out on the job. However, as a guide to start, the screed should be tilted about ¼ in. for non-air-entrained concrete and ⅛ in. for air-entrained concrete. At the same time, the bottom of the screed should be checked for conformity with the transverse profile.

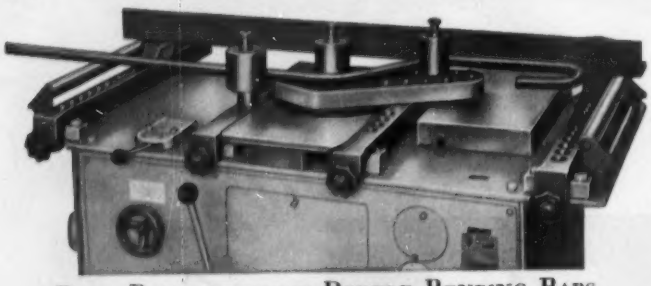
The screed should first be adjusted by the nuts on the hanger bolts to the required crown (or for straightness when the pavement slopes in one direction only.) It should then be tilted the desired amount by use of the front bolts located at the ends of the screed. The entire screed can be raised by moving both front and rear bolts at the screed ends.

The tilt and profile can be checked in this manner: (1) raise the screed, (2) stretch wires across from form to form, (3) place blocks of equal height on each form, and (4) lower the screed onto the blocks. Measurements are made from the wires to the bottom of the screed for profile. Tilt is measured forward and backward of the wires.

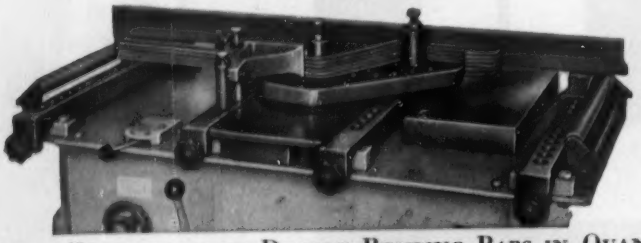
The front screed should be set so that enough concrete passes beneath it to form a roll about 2 in.

(Continued on page 165)

THE "PERFECT" AUTOMATIC BAR BENDING MACHINE.
AVAILABLE IN THREE SIZES WITH CAPACITIES UP TO 2".



REAL PRODUCTION BY DOUBLE BENDING BARS IN ONE OPERATION



MULTIPLY PRODUCTION BY DOUBLE BENDING BARS IN QUANTITY

PLUS VERSATILITY WITH SPIRAL, RADIUS AND STIRRUP BENDING ATTACHMENTS

ALBERT KLINGELHOFER
MACHINE TOOL CORPORATION Industrial Park Kenilworth, N. J.

big savings of time and money!

May Co. Department Store, North Hollywood, California. Albert C. Martin, Architect; T-S Construction Engineers, Inc., General Contractors.

on another job with *Whiteman* equipment

At least 20 hand buggies and 20 men would be required to haul and pour the concrete being handled by 4 Whiteman Power Buggies on the May Co. job. They're gluttons for work. Never get tired or slow down.

T-S CONSTRUCTION ENGINEERS, INC.
800 ST. PAUL AVENUE
LOS ANGELES 17, CALIFORNIA

PAUL B. TICHENOR, PRESIDENT
MERLE F. SMITH, VICE PRES. & TREASURER
PETER STERLING, SECRETARY

HAzeltine 9-1121

February 14, 1955

Whiteman Manufacturing Company
3249 Casitas Avenue
Los Angeles 39, California

Gentlemen:

You will be interested in knowing how Whiteman Power Buggies have speeded up the May Company job and effected a very substantial saving in labor costs.

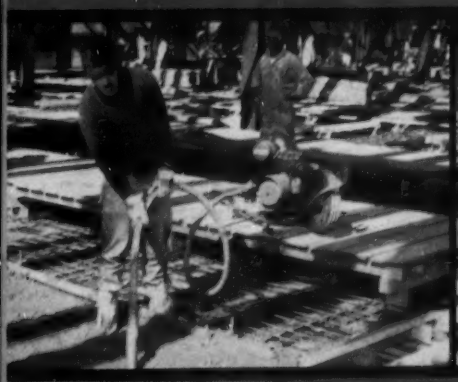
We have handled as much as 375 yards in 5 hours with 4 Buggies, on upper floors, with hauls averaging 225 feet. We don't know what we would have done without them.

Yours very truly,

T-S Construction Engineers, Inc.

Paul B. Tichenor

Paul B. Tichenor
President



WHITEMAN VIBRATORS are efficient, rugged, dependable. Three models, gas and electric, are "tailored to the job." Complete line of vibrator accessories.

WHITEMAN SCREEDING MACHINES do a better job in far less time. Screed to a perfect level. Save labor. Easily portable. Width adjustable from 3 ft. to 20 ft.

WHITEMAN FLOATING-FINISHING MACHINES produce a smooth, perfect slab. Job-proved for 17 years. Four models — one for any job requirement.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

SEND NOW!

Whiteman Manufacturing Co.
3249 Casitas Ave., Dept. C
Los Angeles 39, Calif.

Please send prices, literature and name of distributor for ☐ Vibrators, ☐ Screeding Machines, ☐ Power Buggies, ☐ Floating-Finishing Machines.

Name _____

Firm _____

Address _____

City _____ Zone ____ State _____

Underseal Work on Penn Turnpike Done 45% Faster with One Tractor-Compressor and Drilling Attachment

. . . not only is pavement drilling faster, but costs are lowered through savings in equipment and manpower

One self-propelled Le Roi Tractair has replaced a parade of drill runners and hose-drag helpers struggling along behind truck-towed compressors on the busy Penn Turnpike. This tractor-compressor increases the speed of pavement drilling by 45% on asphalt underseal work. At the same time, it provides a tremendous reduction in equipment and labor costs.

The old method of pavement drilling required a large crew with hand-held pneumatic drills, another crew to drag hose, and two or more truck-towed compressors. Work was slow and expensive. Often underseal crews had to stand around waiting for the drilling operation. And heavy Turnpike traffic was tied up behind the project.

A money- and time-saving solution was found in the Le Roi Tractair, operated by one man. It's a combination 42-hp wheel tractor and a 125-cfm air compressor that can be equipped with a wide variety of mounted attachments and air tools. In this instance, the Le Roi-Cleveland Trac-Jac is the attachment used on the Tractair. The Trac-Jac is set vertically at right angles to the pavement where it swings easily so that the drill point can be centered over location marks made by surveyors. Bits bite into concrete rapidly because the Trac-Jac has a quick-acting air feed.

On this job, the Le Roi Tractair with Trac-Jac attachment drills 100 holes per hour, 12 inches deep through concrete with an average hole spacing of six feet. This "self-contained" unit is all that is needed to drill pavement faster at much lower cost. It also permits traffic to proceed during work without serious interference.

There are many ways that the self-propelled Le Roi Tractair can increase production and cut costs. It can do other highway jobs, and countless tasks in light and heavy building. Many efficient attachments are available, plus dozens of Le Roi-Cleveland Air Tools. See your Le Roi distributor.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products.

(Advertisement)

PAVING... Continued from page 162

A SINGLE LEVER adjusts the crown of some finishing machines. Concrete, when properly proportioned to a workable consistency, should form a roll ahead of the screed.

high in front of the rear screed. This rear screed should be adjusted so that there is little or no tilt and the surface of the concrete is left at the proper elevation.

Finishing machines are provided with controls which vary the forward speed and the number of strokes per minute of the screed. Changes in length of screed oscillation can be made by adjustments in the length of the eccentric which controls this movement.

In finishing air-entrained concrete, the best results are obtained when there are at least six oscillations per foot of forward motion. If concrete adheres to the screeds and causes a torn surface, an increase in the number of oscillations per foot of travel usually will remedy the difficulty. When stiff mixes are used, the screed speed should be rapid and the traction slow. This provides more troweling action and works mortar to the surface for later finishing operations. With mixes of greater slump, the speed and length of transverse screed movement should be de-

(Continued on page 168)

New TELESCOPING VIBRATORY **SCREED**

ITS SHOE-PLATE **NEVER** RIDES THE FORMS

Pats. Applied For

BUILT ESPECIALLY for

Overpass and Bridge Roadways

Tilt-Up Slabs and Industrial Floors

The Cmetco Telescoping Vibratory Screed is a radically new piece of cement finishing equipment. It has been engineered to economically solve many of the problems confronting the larger contractors. Costs per cubic yard per man-hour are appreciably reduced. Cost for screeding equipment is less. Better depth compaction is another valuable feature.

Due to its fast telescoping feature it avoids the cost of auxiliary beams. Because it has no beam overhang it can be operated close to existing walls. Forms are protected because the telescoping feature adjusts shoe-plate length to form widths; to fractions of inches if necessary.

3,600 to 10,200 Vibrations per Min.

- **UNSURPASSED FOR DEPTH COMPACTION**
- **RE-TRANSMITTED VIBRATION AVOIDS DEAD SPOTS**
- **CONTROLS ITS OWN PILE-UP**
- **HANDLES MORE CUBIC YARDS PER MAN-HOUR**
- **QUICKLY ADJUSTABLE LENGTH AND HEIGHT**

..... WRITE FOR CATALOGS

LENGTH ADJUSTMENT
• MODEL 302 From 15'-6" to 36'-0"
• MODEL 304 From 10'-2" to 25'-0"
HEIGHT ADJUSTMENT
From 1/2" below to 1 1/4" above top of forms
EASTERN REPRESENTATIVE
Earl H. Pence 403 Oak Lane Baltimore, Md.

CM-15

BETTER EQUIPMENT FOR PLACING AND FINISHING CONCRETE

POWER BUGGIES • TELESCOPING VIBRATORY SCREEDS • ECONOMY VIBRATORY SCREEDS • ROLA PAVERS AND TRENCH BOXES • WOOD AND STEEL TILT-UP HARDWARE • BULL FLOATS • HOPPERS • BUCKETS • ELEPHANT TRUNKS AND CHUTES • TAMPERS • HAND CARTS

cmetco
Trade Mark

Product of

Creative Metals Corporation

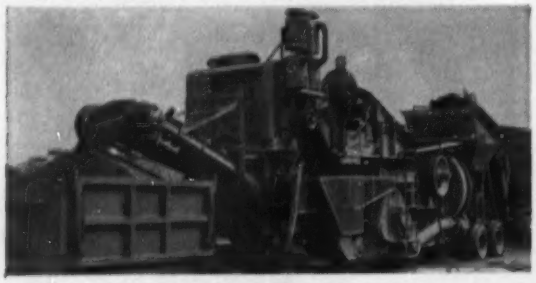
1290 POWELL STREET Phone OLympic 3-8300

EMERYVILLE, CALIFORNIA

DISTRIBUTED IN THE WEST BY W. J. BURKE & COMPANY

PRODUCTION DOUBLED—FUEL COSTS CUT 33⅓%

When Clark & Sons Sand & Gravel Company switched to a GM 2-cycle Detroit Diesel properly engineered for this dredge, production jumped more than 200% and fuel costs dropped one third. GM Detroit Diesel weighs half as much as engine it replaced, starts easier, too.



FUEL COSTS $1.18 PER HOUR

And that's "mighty cheap" for a 300-H.P. engine according to Charles Bartelma, Superintendent of Minnesota's Kimmes Construction Company. This GM Detroit Diesel-powered Cedarapids crusher produces 4,200 tons of gravel a day—engine has had no repairs in 2½ years.

PRODUCTION UP 30%—FUEL COSTS CUT 40%

When Calumet Paving Company switched to a GM Detroit Diesel on this paver they got an engine that "starts easier, performs better, costs less for fuel and maintenance." Company also operates two other pavers and three crawlers—all GM Detroit Diesel-powered.

15 YEARS' SERVICE AND STILL GOING STRONG

The GM Detroit Diesel in this Koehring shovel went to work for Paul Frank, Inc., in 1941—is still giving "economical, trouble-free service." Owner calls engine an "excellent investment, considering low first cost, operating economy and long life between overhauls."

For Lower Costs on
SPECIFY GM
In ALL Your

OPERATES 20 GM DETROIT DIESELS

Ohio road-builder A. J. Baltes, Inc., operates 20 GM Detroit Diesel engines powering shovels, cranes, draglines and other equipment. Company specifies GM Detroit Diesel power when ordering new equipment—also replaces other engines with GM Detroit Diesels to get "the fundamentals needed for economical operation—performance, economy and service availability."

Every Contract

DETROIT DIESEL POWER

Construction Equipment

YOU CAN HANDLE every construction job from first cut to final paving—and handle it at less cost—with General Motors Detroit Diesel-powered equipment.

Shovels, scrapers, compressors, graders—machinery for over 1,000 applications made by more than 150 manufacturers—are powered with GM Detroit Diesel engines, *America's first choice Diesel.*

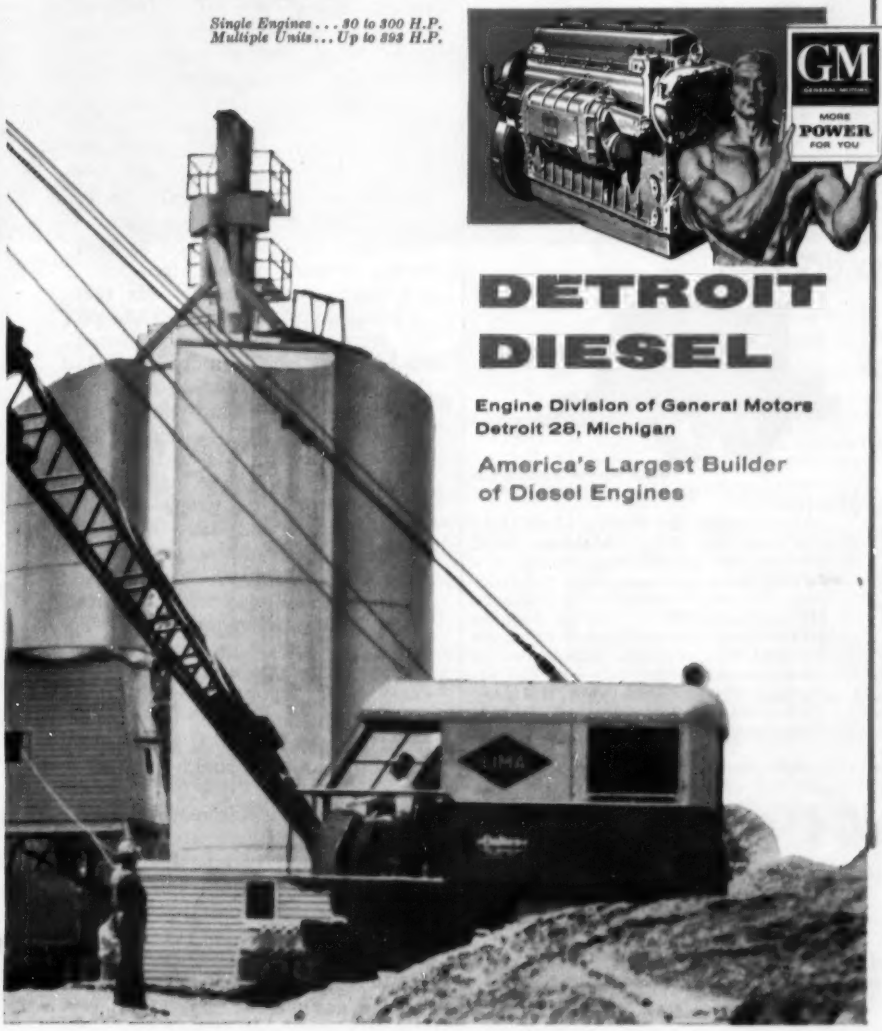
This compact, brawny work horse costs less to buy than other Diesels of comparable horsepower.

It costs less to run because its snappy 2-cycle operation gives faster acceleration, faster digging and hauling, more work done per shift.

And it costs less to maintain, too. Parts cost less. Valves, cylinder liners cost less than similar parts for other Diesels.

For full details on GM Detroit Diesels—and the equipment they power—call in your local GM Detroit Diesel distributor or write direct.

Single Engines . . . 30 to 300 H.P.
Multiple Units . . . Up to 393 H.P.



DETROIT DIESEL

Engine Division of General Motors
Detroit 28, Michigan

America's Largest Builder of Diesel Engines

Parts and Service

When and Where You Need 'em

Back of GM Detroit Diesel performance stands a national network of 165 GM Detroit Diesel distributors and dealers.

They're ready to supply you with factory-engineered parts *where* and *when* you need them.

They're ready to send factory-trained servicemen speeding to your job day or night—men with all the skill and know-how it takes to keep your GM Detroit Diesels running right.

And they're ready to fill your every power need whatever it is—from a complete new engine to a minor replacement part.

When you get replacement parts from your GM Detroit Diesel distributor or dealer you're getting *factory-engineered* parts built to the same high quality standards—by the same precision methods—as the parts used in building GM Detroit Diesel engines.

You get parts with every improvement advanced engineering has developed because *only* GM Detroit Diesel parts have *all* the improvements originated by GM engineers at Detroit Diesel.

And you get longer-wearing parts that have been proved in billions of hours of service on the toughest jobs.

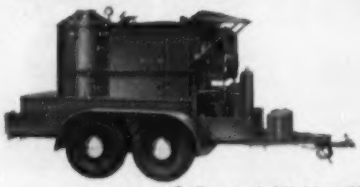
For full details on the parts and service behind GM Detroit Diesel performance, call in your local GM Detroit Diesel distributor or dealer. He's listed in the Yellow Pages—or write direct for the name of the distributor nearest you.

Central Pennsylvania Quarry, Stripping & Constr. Co. uses Malsbary series 300 HPC cleaner on big "Euc." All trucks, tractors, graders, compressors, etc., are cleaned as part of regular maintenance. Note how nozzle confines force of hot solution to small area.

How Much Can You Save By Reducing Equipment Cleaning Time?

Here's experience of Malsbary HPC users:

Cleans 4 times faster – Cleaning mud, grease and cement from ready-mix trucks with steam vapor cleaner required full day's downtime for each truck. Now a Malsbary 300 HPC (high pressure combination) cleaner cleans four trucks daily – and does better cleaning job.



Trailer mounted Malsbary 300 for field cleaning.

Cleaning Reduces Cable Breakage – Mud froze in scraper bowls sitting overnight in zero weather, frequently causing cables to snap when starting next morning. Two Malsbary HPC cleaners remove mud from 35 tractor-scraper rigs nightly, thus ending morning-after cable breaks and lost time.

Malsbary HPC cleaners deliver lots of solution (240 to 2100 g.p.h.) at pressures to 400 p.s.i. With these pressures, hot solution, hot rinse or cold water literally blast away stubborn deposits of dirt that smaller cleaners can't touch. Users report these average cleaning times:

D7, D8 tractors	1½ - 2 hrs.
D8 with sideboom	2 hrs.
TD Dozershovel	2 hrs.
Payloader	45 mins.
Motor grader	3½ hrs.
1½ yd. shovel	3 - 4 hrs.

Compare the time you now spend cleaning similar equipment . . . check current costs of having equipment tied up for cleaning and repairs. Most likely you'll see how greatly Malsbary HPC cleaners can benefit your operation – as they have so many other construction equipment users. Only Malsbary HPC cleaners offer you seven cleaning actions from one machine. With series 300 and 500, you can operate two or more guns simultaneously–one delivering high-pressure cold water, the other high-pressure hot solution – a real time saver.

Ask your Malsbary dealer to demonstrate on your job NOW, or write us for literature more fully describing HPC models.

87

MALSBARY MANUFACTURING CO.

SINCE 1921

Room C, 845 - 92nd Ave., Oakland 3, Calif.

Continued from page 165

creased and the forward speed increased. This prevents overworking with resultant flowing of the concrete toward the low sides of the slab and an excess of mortar on the surface.

Finishing machines can be equipped with any of several types of vibrators. A vibrating tube can be placed ahead of the machine; vibrators can be attached to the front screed; or vibrating pans can be placed between the two screeds. Ordinarily, these attachments should vibrate at the rate of at least 3,500 cycles per min. under full load. Some adjustment in rate of vibration may be required to produce good results with certain mixes.

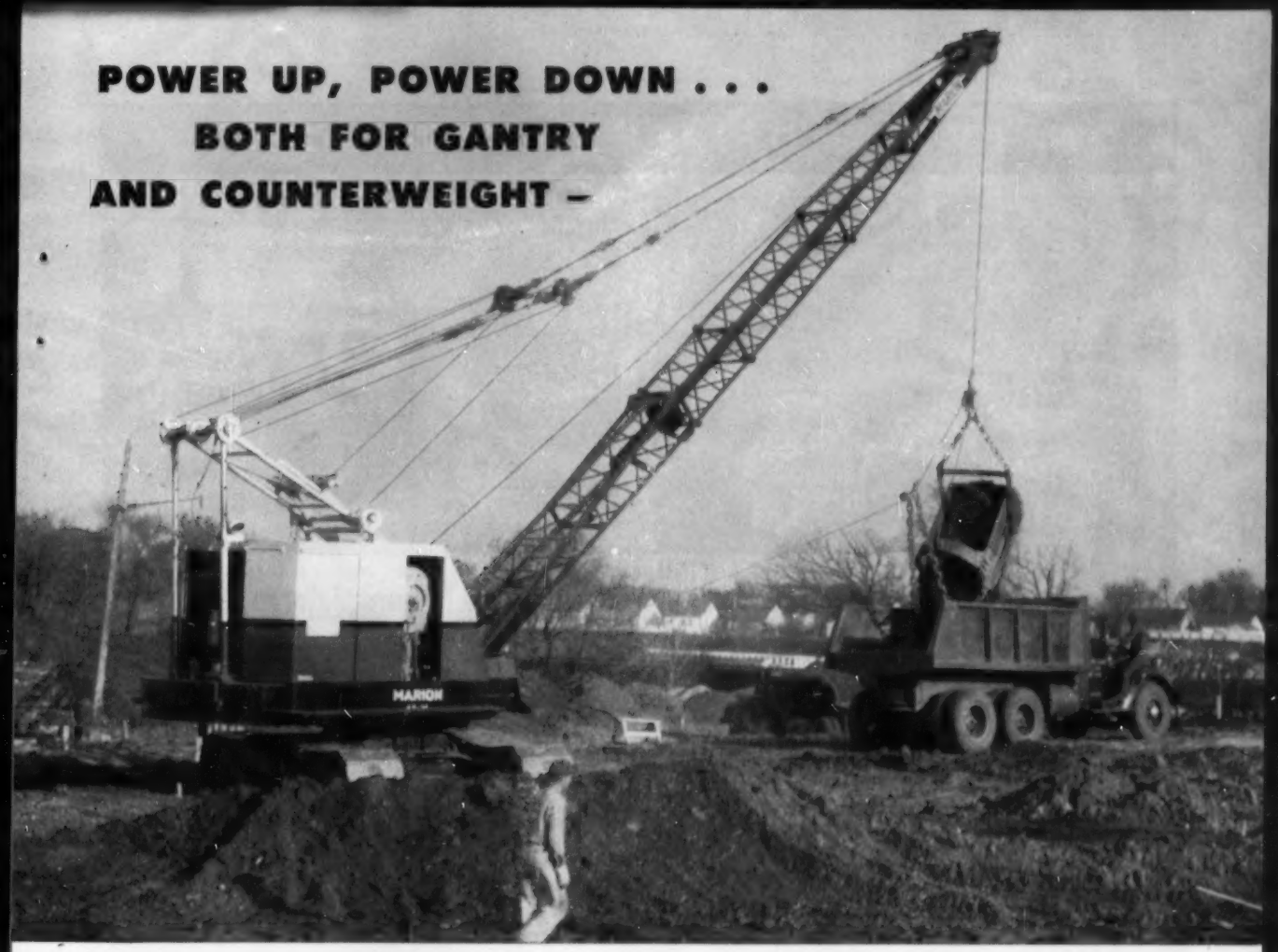
Finishing machines also can be provided with tamping bars. This is a transverse steel-shod timber, usually about 4 in. wide, hung between the two screeds and cut to the shape of the pavement surface. It is lifted and dropped on the pavement surface during the forward motion of the machine. It should strike the pavement 8 to 12 times during each foot of forward motion. Both the vibrator and the tamper should be operated only during the first passage of the machine and must be shut off as soon as the forward motion stops.

Finishing machine screeds rest on wearing plates which slide on the forms or along the hardened concrete of adjacent lanes. Although made of abrasion-resisting steel, they may wear thin. This has the effect of lowering the screed, so wearing plates should be checked at intervals to insure that the screed is at the proper height.

The finishing machine shapes the concrete to conform to a specified crown. Some of the newer machines are equipped with a device for gradually reducing or increasing the crown of pavements constructed two lanes at a time as they enter and leave super-elevated curves. This is done by the movement of one lever. A gage indicates the crown provided by the screed.

When the finishing machine performs its functions satisfactorily, not more than two passes of the machine should be required to complete shaping of the surface, and only minor corrections should have to be made in remaining operations. The final pass should be a

(Continued on page 174)



1½ yard MARION Dragline Excavates for $700,000 Office and Warehouse

This Marion 43-M carries a 1½ yard bucket on a 50-foot boom while opening the basement for a $700,000 building in St. Louis Park, Minnesota.

Power raising and lowering of the two-section counterweight simplifies the preparation of this machine for travel to and from jobs. It's an optional feature on the 43-M.

The gantry also is power raised and lowered, simplifying the adaptability of the machine to various job problems.

Best of all, NO CHANGE IN LAGGING is needed to convert 43-M front-end equipment. Let your MARION Distributor help you get the benefits of this machine's versatility.

Whatever your job requirement, there is a Marion machine of the right size and type for greatest efficiency

MACHINE	SHOVEL CAP. CU. YD.	MAX. CRANE RATING IN TONS @ 12' RAD. EXCEPT AS NOTED CRAWLER	TRUCK	WAGON	HOE CAP. CU. YDS.	ASK FOR BULLETIN NUMBER
MARION 32-M	¾	*17½	*25	*25	¾	416
MARION 43-M	1	*27	*35	—	1–1¼	415
MARION 362	1½	37	—	—	1½–2	398-D
MARION 372	—	43	—	—	—	—
MARION 83-M	2	60	—	—	2–2¼	414
MARION 87-M	—	75	—	—	—	—
MARION 93-M	2½	80	—	—	—	397-E
MARION 101-M	3	84	—	—	—	417
MARION 111-M	4	169	—	—	—	402-B

*Rated at 10' Radius in Accordance with General Practice.

MARION POWER SHOVEL CO.

MARION, OHIO, U. S. A.

Please send me Bulletin 415 on the Marion 43-M.

Name _____ Title _____

Company _____

Address _____

ON EVERY OFF-THE-ROAD JOB . . .

GENERAL

gets the work done *FASTER* at *LOWEST* cost!

ONLY GENERAL
GIVES YOU
STRONGER-THAN-STEEL
NYGEN® CORD
FOR EXTRA PROFIT
ON THE JOB!

Every hour of every day, in quarries and strip mines, on logging and construction jobs the nation over, The General Tire proves its reputation for toughness, strength and dependability.

Delivering deep-down driving traction and high flotation *plus* Nygen Cord protection against job hazards, The General Tire continues to get the work done faster at lowest cost wherever it operates!

THE GENERAL TRUCK TIRE

Specify GENERALS *on your new equipment*

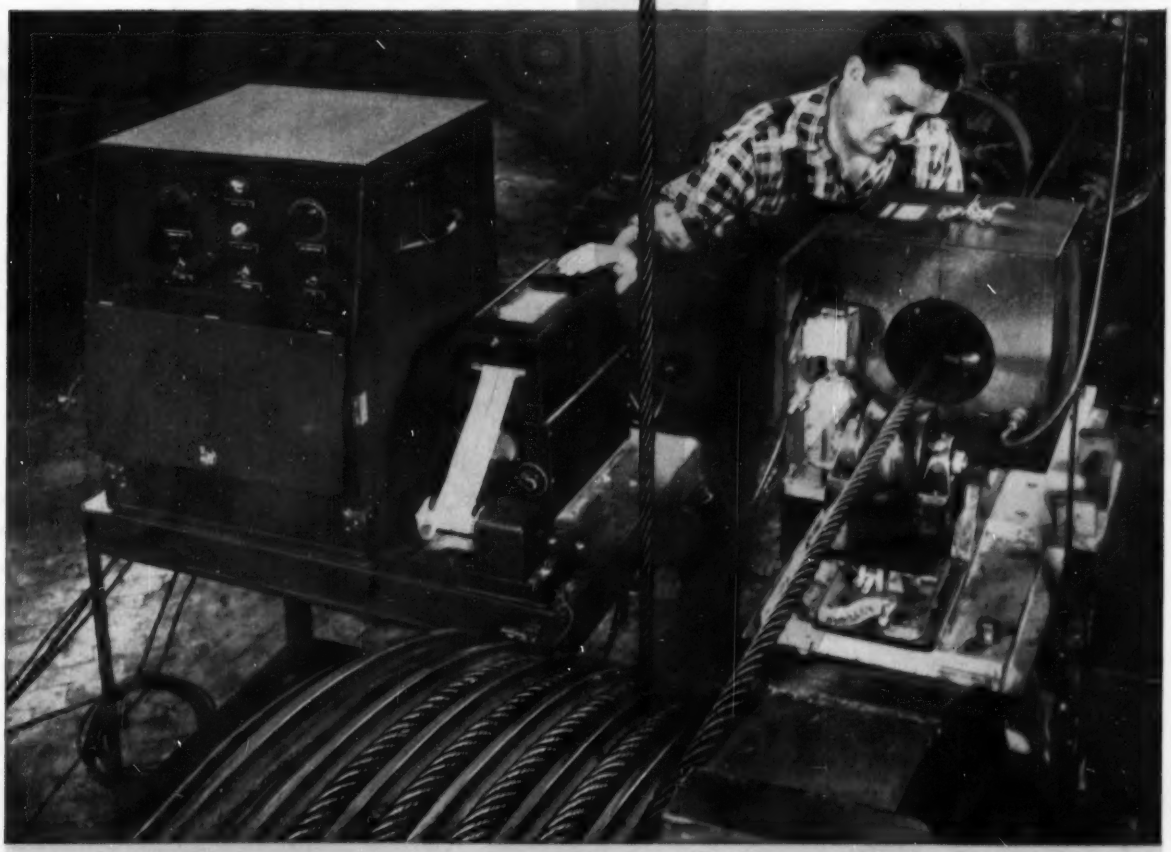
THE GENERAL TIRE & RUBBER COMPANY · *Akron, Ohio*

Amazing new electronic "inspector" detects slightest imperfections in wire rope

This new inspection machine literally "sees through" wire rope and detects any imperfections that may occur in the manufacturing process. It inspects every inch of rope, 360° around, and *all the way through!* If an imperfection occurs, the machine instantly records it on a chart, squirts paint on the rope, lights a light and alerts the operator to correct the flaw.

In the preliminary tests using wire rope containing specimen broken wires, the electronic "inspector" proved 100% effective. It didn't miss one. These tests prove to us that this device will give the regular inspector a superior tool which will work continuously and will "see" all.

To our knowledge, American Steel and Wire Division is the first wire rope manufacturer to recognize the possibilities of this electronic inspection device as an *extra* step in quality control that will assure better, more uniform wire rope.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL

F-100 8-ft. Pickup—GVW 5,000 lbs.

T-800—GVW 42,000 lbs.; GCW 65,000 lbs.

FORD BIG JOBS can mean

FORD EXPERIENCE IN HEAVY DUTY ENGINES PAYS OFF . . .

- **Much longer peak engine performance!**
- **Much less DOWN TIME on the job!**

Ford Trucks for '56 save you money right from the start. And, they keep on saving with their extra-sturdy, long-life engine design.

For instance . . . Ford Engineers have now introduced into all heavy-duty engines the greatest valve advancements ever. As an example, see the exhaust valve in diagram on right page. The valve stem is hollow and partially filled with powdered sodium. When the sodium gets hot, it *turns into a liquid.* As it moves up and down, it carries heat away from valve head—*allows it to operate up to 225° cooler!* Result: a cleaner-running, more burn-free, longer-lived valve face.

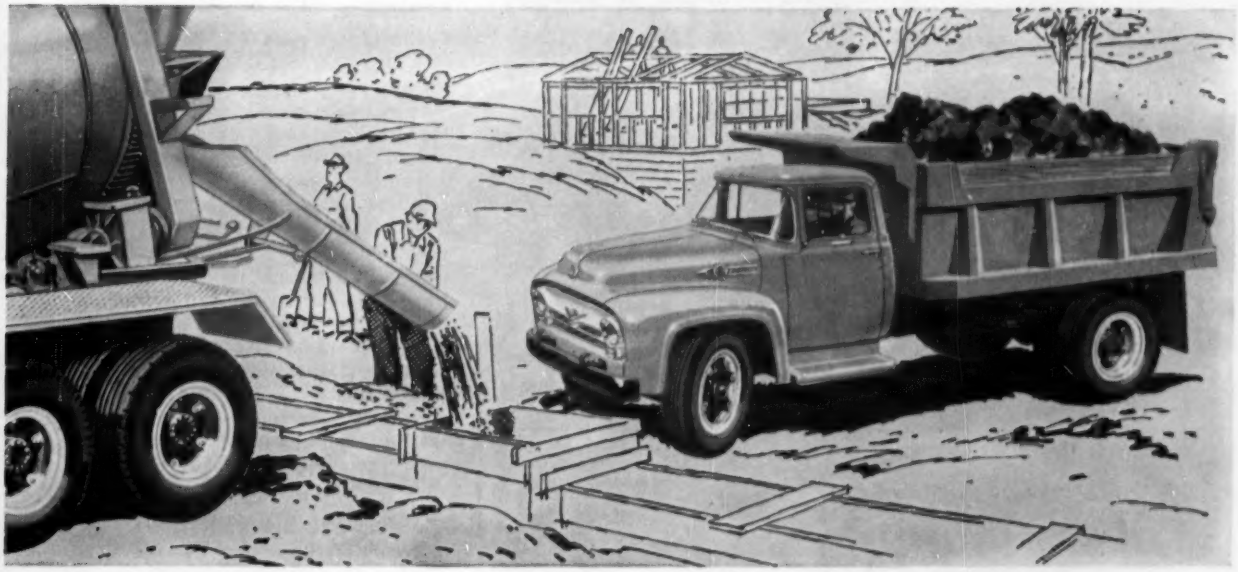
Ford's long-lasting engine design pays off for you in every way. You save money on parts replacements such as piston rings and bearings. You save on shop labor—extend time between preventive maintenance jobs like valve adjustments, valve grindings, compression tests, ring jobs and the like.

And you can save on driver costs if you can keep trucks out of the shop and on the road. Yes, you save in every way when you get more work done per truck!

There's a Ford Truck for every trucking job. Before you buy your next truck, Test Drive a Ford Economy Truck.

FORD TRUCKS LAST LONGER

Certified by independent insurance actuaries for the ninth consecutive year! Studies of over 10,068,600 current license registrations show that Ford Trucks last up to 9.9% longer than any of the other 4 leading truck makes!



F-900—GVW 29,000 lbs.; GCW 60,000 lbs.

BIG SAVINGS in your business

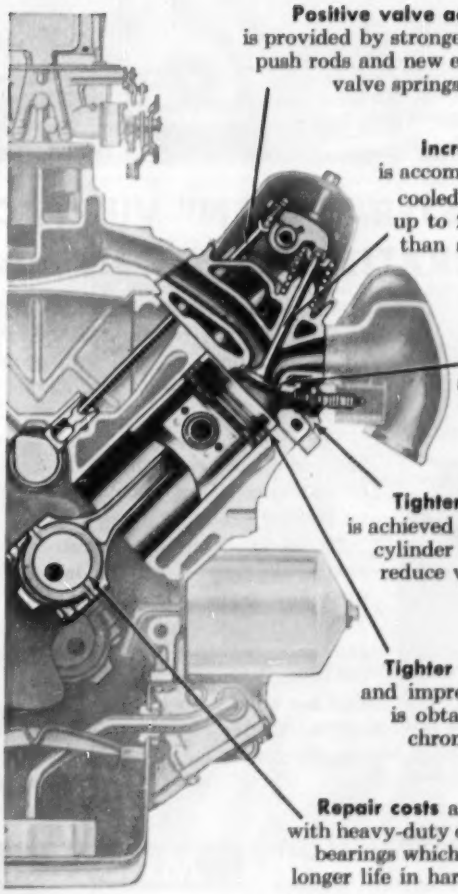
Hauls up to 3000 lbs. more than other 6-wheelers—New Ford T-800

● New power and hauling capacity of the Ford Tandem BIG JOB cuts hauling time on every run—makes giant cargos seem lightweight. You have a choice of two gas-saving Short Stroke engines. Either the 190-h.p. *Torque King* V-8 or, the 200-h.p. *Torque King* Special V-8.

You have new engine advancements for longer life (some explained and illustrated at the right).

New high-capacity tubeless tires, heavy-duty 5-speed transmission and Power Steering are standard equipment, at no extra cost. Two 3-speed auxiliary transmissions and full-air brakes are available at low extra cost.

New *Driverized* Cabs for driving comfort and convenience have *Lifeguard* Design safety features found in no other truck. Lifeguard steering wheel helps protect driver from steering column; Lifeguard door latches help keep doors from jarring open in case of accident.



Positive valve action is provided by stronger, tubular push rods and new equal-coil valve springs.

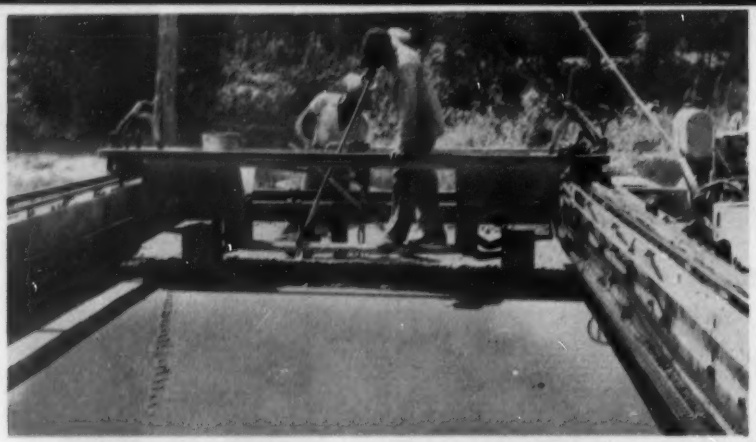
Increased valve life is accomplished with sodium-cooled exhaust valves—up to 225° cooler-running than solid-stem valves.

Longer valve and seat life are the result of solid tungsten-cobalt alloy facings and exhaust valve seat inserts.

Tighter valve closing is achieved with stress-relieved cylinder heads that help reduce valve distortion.

Tighter compression seal and improved ring durability is obtained with thicker chrome-plated rings.

Repair costs are lower with heavy-duty copper-lead bearings which provide longer life in hard service.



LONGITUDINAL FLOAT should carry only a small amount of concrete ahead of its screed. If the float cuts deeply into the surface, stop the machine and raise the screed.

NEW MASTER "1-MAN" VIBRATOR CUTS VIBRATING COSTS IN HALF

Only 25 lbs. Easy to handle.

It weighs 25 pounds! It's all in one piece! It plugs into any regular 115 Volt AC or DC electric line . . . and with no heavy engine or motor to drag around, one man handles it easily.

The motor is sealed in the vibrating head, so there's no flexible shaft to get out of whack; no oiling or greasing problems; no kinking troubles.

No field maintenance is necessary: when motor head needs attention, snap it off and snap on a spare.

The vibration actually penetrates farther and leaves fewer voids in the concrete than old-style vibrators.

The price is *low*. The design has eliminated so much cost, and no special power source is required, but the big saving comes in use. Write for folder or ask your Master distributor for a free demonstration. You'll see exactly how the Master "1-Man" can cut your vibrating costs *at least* 50%.

MASTER VIBRATOR COMPANY
131 Stanley Ave., Dayton 1, Ohio

MASTER

PAVING...

Continued from page 168

continuous run of considerable length. Some specifications require that it be at least 40 ft without pause.

The less manipulation of the concrete, the less chance of segregation of mortar and coarse aggregate On projects where two 34E pavers are used on single-lane pavement, it may be found advisable to use two finishers to keep these operations close up to the pavers. If the pavement is reinforced, it also may be economical to use two spreaders. One of these strikes off the concrete at the elevation of the mesh; the other, provides the final surface.

Floating the Surface

Following the final pass of the finishing machine, the pavement is further shaped and smoothed by a longitudinal float. On modern highway paving projects, self-propelled mechanical floats usually are employed. A typical machine consists of a steel screed that moves slightly forward and back as it progresses across the pavement from one side form to the other. The float moves laterally on tracks which support it at the proper elevation. This floating action is performed while the machine moves forward on the side forms.

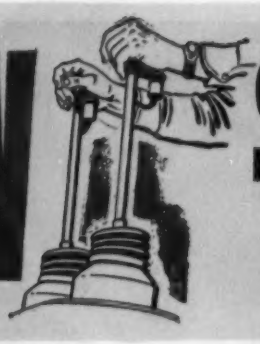
Before a mechanical float is placed in operation, it should be checked to insure that it is in proper adjustment. To be effective, these checks should be made in proper order.

First, the tracks from which the float is suspended should be adjusted. There are two of these: one straight and the other curved to correspond to the crown of the pavement. The first step is to set the ends of the *flat* or inside tracks exactly 25¾ in. above a line connecting the bottom of the front and rear wheels. The flat track should be made exactly straight. Using this track as the horizontal, the curved track should then be set to the proper crown.

After tracks are in proper alignment, the machine should be checked to make certain that the bottom edge of the float is straight and smooth. Wires then are stretched between forms, and measurements made to insure that the float is in a plane parallel to the finished road surface, both laterally and longitudinally. The bottom of the screed must be at the

(Continued on page 177)

NOW ONLY 2 LEVERS FOR ALL OPERATIONS



LORAIN Full-Metered

"AIR-EASE" CONTROLS

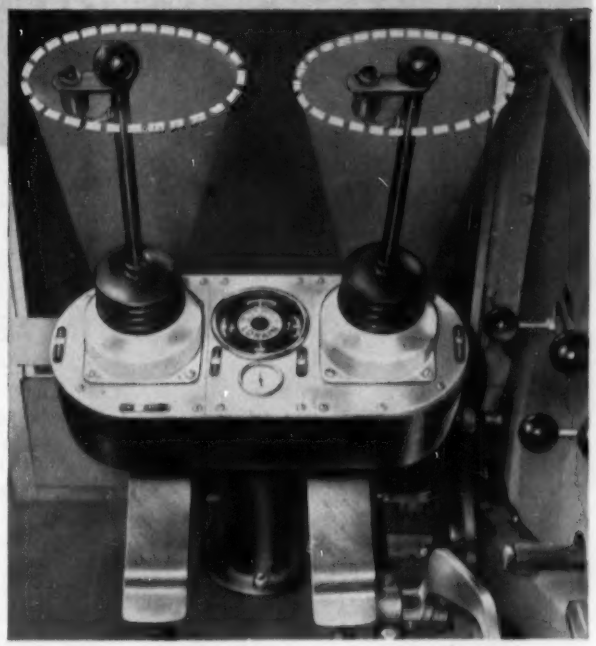
Reduce Operator Effort . . .
Provide Better Control

The latest Lorain advance brings a new era of operation to shovel-crane operators and owners. Now, Full-Metered "Air-Ease" operation controls all friction clutches. Now, two simplified hand levers replace the bank of awkward multiple levers of the past. These two levers put "Metered Air" to work feeding power to the clutches at any rate of flow desired. All of the old time "feel" and response is there, lever manipulation is simplified, effort is greatly reduced, speed is increased, control is more accurate. The range of air flow and power is at the precise command of the operator.

To the operator, here is a new day of operating ease and lack of fatigue. To the owner, no feature in years has added so greatly to production.

To be the first to put the new 2-lever "Air-Ease" control to work on your jobs, see your Thew-Lorain Distributor. Here is a feature your next shovel-crane should have!

THE THEW SHOVEL CO., LORAIN, OHIO



LEFT LEVER — Yellow circle indicates the "wobble stick" action. By positioning lever in various directions within this circle, operator can swing the turntable right or left, or raise the boom up or down. Intermediate positions within the circle combine any of these operations.

RIGHT LEVER — In the very same rotating action, the operator can control these operations: (1) Main Hoist; (2) Secondary Hoist; (3) Clamshell Holding; (4) Drag or Hoe Drag-in; (5) Shovel Crowd-Retract; (6) Third Drum; (7) Power Load Lowering.

All operations described above are controlled by moving these levers forward or backward, from side to side for single operations, or "quartering" the levers for combined operations. Air booster operation of Hoist Brakes is available.

IMPROVED VISIBILITY

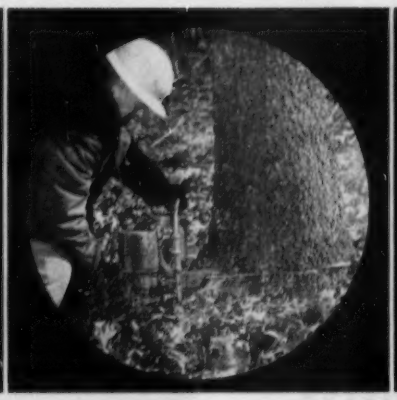
This view shows the clean, simple, 2-lever control arrangement in the operator's cab. Operator gets full view of work area, particularly on deep digging operations.

Intermittently used Full Air controls for crawler steering, turntable swing lock, tread-travel lock, shifting of travel-swing jaw clutches, are conveniently located on panel to right of operator.

The new 2-lever Full-Metered "Air-Ease" controls are now available on eight Lorain models, both crawler and rubber-tire mountings, in 20 to 30-ton range.

THEW LORAIN®

New HOMELITE EZ



...the Direct-Drive CHAIN SAW with ALL of the features YOU want

Only 19 pounds

Full 5 Horsepower

New Low Cost

Faster Cutting Speeds

AND WITH THE NEW HOMELITE FLOATING POWER, you'll find handling ease you never knew before. The all-angle, any-position carburetor gives you full power cutting — whether you're felling, bucking, notching, limbing or under-cutting.

Floating Power lets you cut with less effort, less fatigue than any other chain saw. Because the Homelite EZ weighs only 19 pounds you can carry it anywhere. Its full 5 horsepower cuts through 8″ Oak in 5 seconds and 18″ Pine in 14 seconds. And the three bar sizes — 17″, 21″ and 25″ will handle trees up to 3 feet in diameter.

The EZ brings you Homelite dependability at a new low cost — not just a low initial cost, but also lower maintenance and operating costs than any other direct-drive chain saw.

See this new floating power now! Try it and you'll know why the Homelite EZ offers easier cutting, faster cutting, more profitable cutting for your dollar.

Ask your Homelite dealer for a free demonstration. Also ask about the convenient time payment plan.

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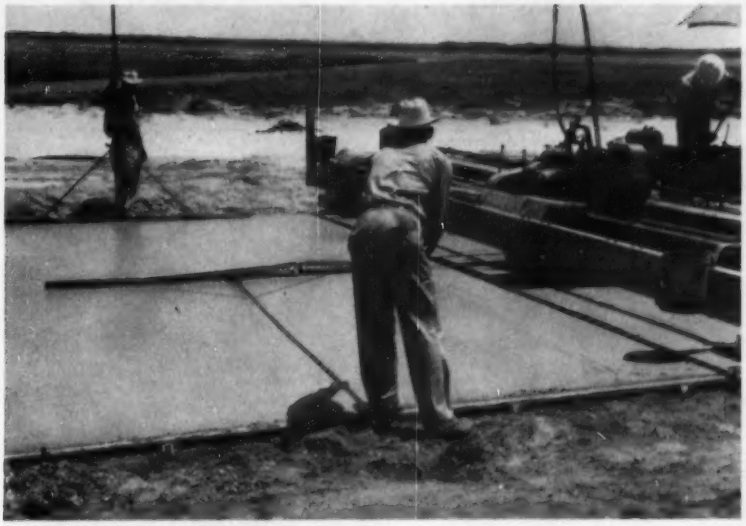

LONG-HANDLED STRAIGHTEDGE removes small amounts of material pushed to the center line by the finishing machine. It should be at least 10 ft long and light in weight.

proper elevation in relation to the forms. Detailed instructions as to the method of making these adjustments, as well as those which control the motion of the float, are given in the manufacturer's instructions.

If finishing operations have been properly performed, the longitudinal float will be needed only to smooth out minor irregularities. Only a small amount of mortar should be carried in front of the screed along all but about the rear 2 ft. If the machine cuts deeply into the surface so that a heavy load of concrete is built up in front of the float, the forward motion of the machine should be stopped and the surface corrected.

Any excessive amount of material carried by the float should be dumped over the forms. However, if only a small amount of mortar is carried, the float can be raised just before reaching the form, and the mortar carried back across the pavement. If there is no material along the screed, concrete should be added to prevent the formation of a low spot. Concrete used for the filling of low spots during any stage of the finishing operations should be fresh material. Mortar or concrete which has been dumped over the forms *never* should be used for this purpose. Transverse and longitudinal motions of the screed should be set so that all areas are passed over twice in the floating operations.

The timing of this entire operation is extremely important. Floating should be delayed as long as consistent with proper completion of straightedging and other finishing operations which follow. This permits most of the settlement to take place before final floating.

If non-air-entrained concrete is used, floating operations can be kept at least 30 min. back of the transverse screed. If air-entrained concrete is used, the longitudinal float must be kept somewhat closer behind the placing and finishing operations.

Where manual floating is permitted, a wood float at least 10 ft long and 12 in. wide should be used. This float should be equipped with plow handles at each end and should be operated from bridges over the slab. After the float is dragged once back and forth across the pavement with a sawing motion, it should be moved forward one-half length and the operation repeated.

In some locations, particularly on the West Coast, the longitudinal float consists of a long-wheelbased (23 ft) self-propelled machine equipped with diagonal hardwood floats and a roller. The roller, located at the front of the machine, depresses the coarse aggregate and brings mortar to the surface. Four to six trips of the machine usually are required to complete the finishing. Thus far, the machine is applicable only to lane-at-a-time construction. Its long wheelbase makes it possible to obtain a very even surface.

(Continued on page 180)

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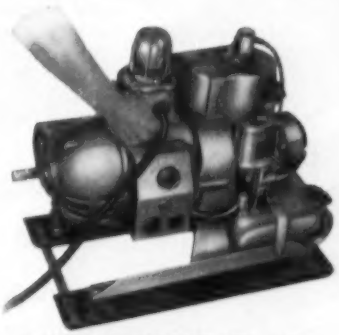

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PORT CHESTER, N. Y.

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says **STREET BOYD**
of **STEINBERG-BOYD CONSTRUCTION CO.**
TULSA, OKLAHOMA

PAVING STONE

OKLAHOMA SPECIFICATIONS	CEDARAPIDS PRODUCTION % PASSING
100% passing 3"	100%
95-100% passing 2"	97.7%
70-95% passing 1½"	85.1%
50-85% passing 1"	61.7%
------passing ¾"	34.6%
15-40% passing ½"	19%
------passing ⅜"	10.6%
0-2% passing No. 4	1.9%

CLASS A

OKLAHOMA SPECIFICATIONS	CEDARAPIDS PRODUCTION % PASSING
100% passing 1½"	100%
90-100% passing 1"	95.9%
------passing ¾"	70.7%
25-60% passing ½"	29.7%
------passing ⅜"	12.4%
0-5% passing No. 4	1.4%

". . . and we're getting 180 to 250 TPH in Paving Stone, 140 to 160 TPH in Class A from our new Cedarapids Portable Crushing Plant."

You can hit specs right on the nose, too . . . outproduce any comparable plant . . . and do it at the low production costs that step up your profit. That's some of the reasons Steinberg-Boyd is so well satisfied with their new Cedarapids Unitized Portable Crushing Plant. It consists of a 2540 Portable Primary, an 1836 Twin Jaw Scalping Unit and the brand new Cedarapids Model 30C Secondary Plant featuring the Symons Cone Crusher. It's a plant designed to meet the big output and exacting gradation demands of modern turnpikes and toll roads.

Best of all, this set-up has all the features that *make money for you* on every job.

THESE EXCLUSIVE CEDARAPIDS FEATURES ASSURE BETTER GRADATION BIGGER PRODUCTION LOWER OPERATING COSTS

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2. TWIN JAW CRUSHER
. . . increases primary crushing production up to 40% over single jaw units and is especially efficient in abrasive rock or gravel.

3. HORIZONTAL VIBRATING SCREEN
. . . steps up screening capacity because the horizontal position of the screen cloth gives 12½% more screening area than an inclined screen of the same length.

4. SYMONS® CONE CRUSHER
. . . produces high tonnages of uniform, fine-crushed aggregate, even in the hardest or most abrasive rock or gravel. The Symons Cone Crusher, built by Nordberg, and world famous for big-volume, low-cost operation, has been combined with Cedarapids mobility and quality construction to give you a portable plant with the high-profit features of a permanent installation.

Cedarapids
Built by IOWA

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

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Construction men everywhere find Thermoid Hose stays on the job longer—cuts replacement costs and down time. One big reason is quality construction. Another: Thermoid designs hose for specific conditions and uses. Here are three examples:

THERMINE — High pressure air hose. Oil resistant tube is reinforced by heavy duty yarn. Built on steel mandrels for high tensile strength. Smooth, abrasion resistant cover.

#325 S.B. SUCTION — Heavy duty hose for water suction service. Smooth bore, wrapped hose with heavy wire reinforcement, durable duck plies.

#300 AIR HOSE — Wrapped construction, oil resistant synthetic tube and covers. Heavy duck reinforcing plies. Ideal for use in mines and quarries.

These are typical examples of how Thermoid Personalized Service meets the specific, exacting requirements of the construction industry.

Thermoid

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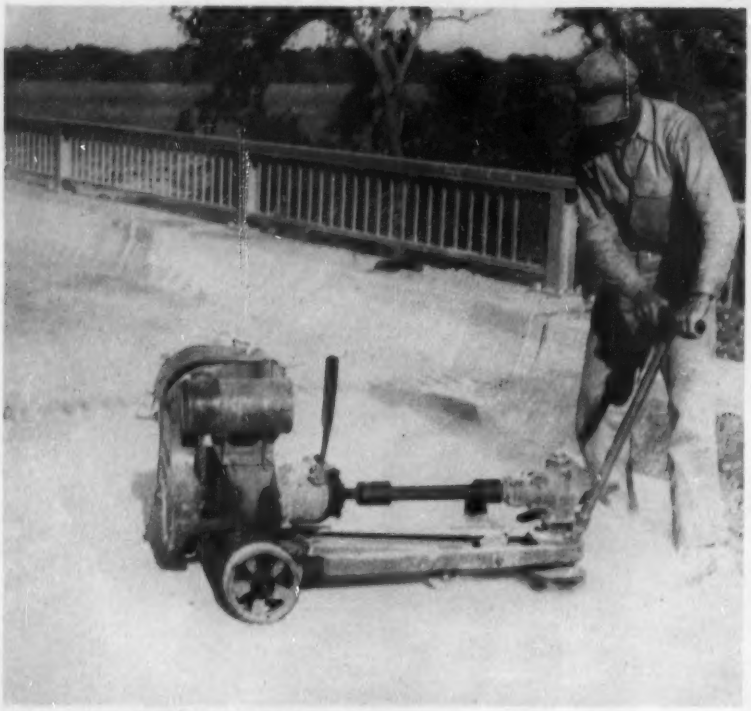
Make Thermoid your choice, too for Multi-V Belts . . .

. . . and Conveyor Belting, specifically designed for the job.

Your Thermoid Distributor can help you select the Hose, Conveyor Belting, Multi-V Belts designed to lower your operating costs.

PAVING... Continued from page 177



CARBORUNDUM WHEEL grinds down a high spot in pavement at a bridge approach. Grinding should not be carried to the point where it breaks the bond of the aggregate.

The float usually is the last piece of mechanical equipment used in concrete pavement construction, so a few remarks applicable to all these machines are appropriate here. Mechanical equipment must ride smoothly if smooth-riding pavements are to be built. So it is important to keep the tops of the forms and the wheels of all pieces of equipment clean. Spring steel wheel and form scrapers are provided and should be kept in contact with the wheels and forms of all finishing machines and longitudinal floats to remove accumulations of concrete.

For normal operation with steel forms along each side, the wheels of equipment should have single flanges on the outside of the form. When one steel form and an existing concrete pavement supports the equipment, wheels with double flanges should be used on the form side, and flat wheels should be used well back on the existing concrete. When there is a concrete slab on both sides, wheels should have flanges on the inside and should be provided with extensions on the

(Continued on page 185)

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- **HOISTS**—Many models. Single, double drums to 45 H.P.

CMC's large variety of types and sizes of pumps — assure lower cost water handling on any construction job! At left, 10" Dual Primer; at right, SKWEE-GEE diaphragm.

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USS MAN-TEN High Strength Steel is used in the entire pivot and boom bar assemblies, main bucket sheet and stiffener plate, bucket end, reinforcing and hinge plates, rocker arms and skid shoe. The frame channel is fabricated from a rolled 8-inch "MAN-TEN" channel.

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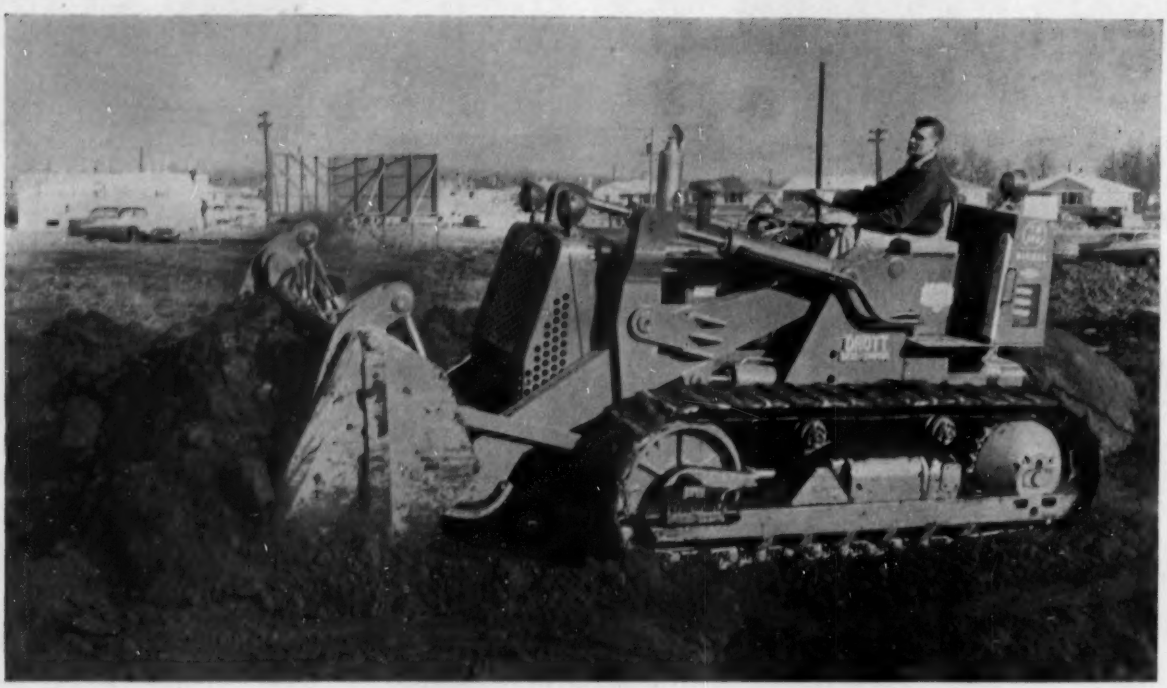

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Skid-Shovel position gives you a speedy, straight-forward, depth-controlled bucket-fill. And to get "concrete-smashing" excavating force, just apply exclusive Drott *triple-power, pry-action breakout!* . . . Give the "machine selector" lever a finger-tip flick, for big-capacity dozing under hydraulic control . . . Another flick gives you a gravel-gulping clamshell, with a 30-inch dumping height advantage over ordinary "roll-forward" buckets! . . . Another lever-flick, and Bull-clam action is at your service—to heap-load the bucket like a carry-type scraper; to strip, grade, or spread with amazing accuracy, using clam lip control! And you *select* any Four-In-One machine action *on the go!*

It's the exclusive International Drott Four-In-One that arms you to beat a fleet of limited-duty rigs. Now available in 3 sizes, 1-yard to 2¼-yard capacity—all with the built-in protection of exclusive, shock-swallowing Hydro-Spring! Ask your International Drott Distributor for a Four-In-One *versatility unlimited* demonstration!

Ditch, grade, "dress shoulders" with Bullangledozer Attachment!

Remove bucket and attach this low-priced Bullangledozer—angle the blade to either side—then tilt the blade from the seat as desired with Drott's exclusive, roll-back action—and you've got a real ditching, sloping, or shoulder-dressing outfit. Or used as a straight dozer, this blade does heavy digging or fine grading under hydraulic "radius control." *Give it a try-out!*

International Harvester Company, Chicago 1, Illinois

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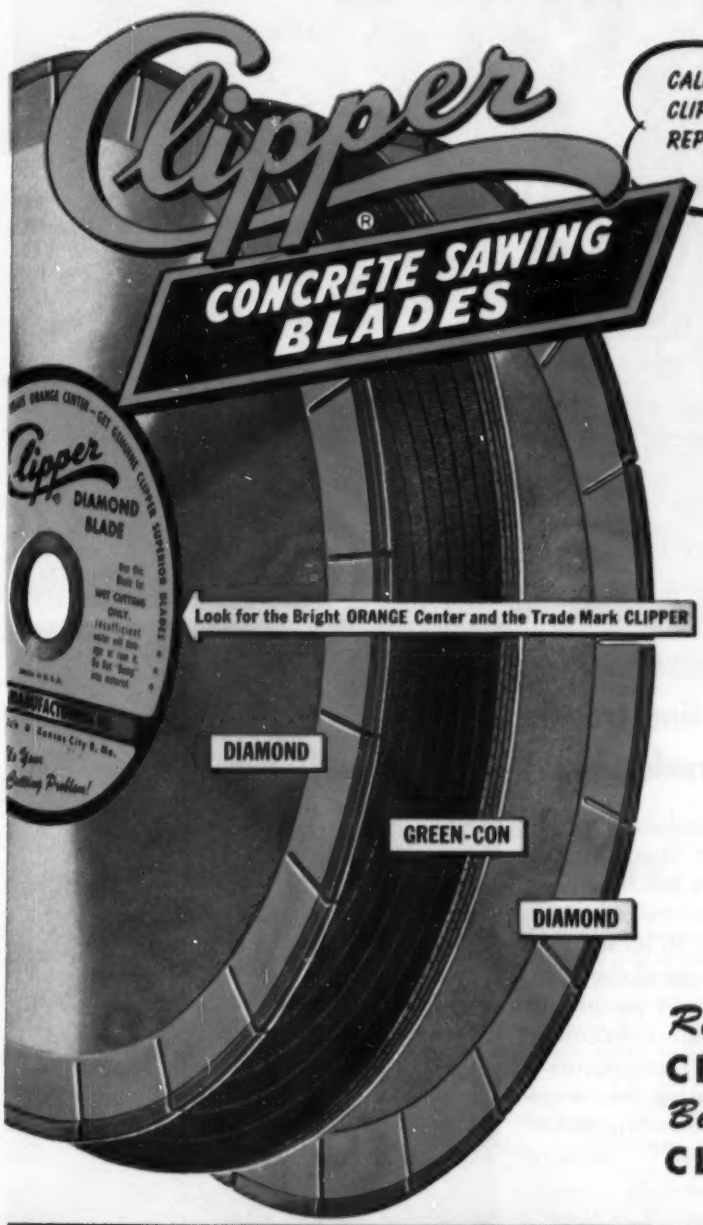

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CLEVELAND

PAVING... Continued from page 180

outside that rest well back on the slab away from the edge of the concrete.

Care should be exercised that equipment is kept straight on the forms. If one side of a machine gets ahead of the other, additional strain is placed on the forms. And, if the condition is not corrected, one or more wheels may become derailed. To bring the wheels back into proper position, it is best to back up the side farthest forward. This should be done slowly so that the machine is under proper control.

Straight-Edging and Final Finishing

Following the longitudinal floating, the surface should be gone over with long-handled straight-edges to remove any marks left by the machine. In this process, the evenness of the surface is tested and any necessary corrections are made. Straight-edges are usually 10 ft. in length and of lightweight construction. For lane-at-a-time construction, handles are 2 ft longer than the width of the lane being paved.

For two-lanes-at-a-time construction, handles are one-half the width of the lanes. For two-lanes-at-a-time construction, straight-edges are pushed to the center and then lifted over any accumulated laitance or excess mortar. This is then pulled to the edge. If any excess still exists, it is pulled over the forms.

Many specifications require straight-edging by an inspector at this stage of construction. Unlike the scraping straight-edge described above, inspection straight-edges are suspended from the handle. They are rested lightly on the surface, then lifted and moved transversely to another location. After testing one area of the slab, the inspector moves along the pavement one-half the length of the straight-edge and repeats the process. This operation is carried out while the concrete is still plastic and the surface can be corrected to conform to specification requirements.

After straight-edging and after most of the water sheen has disappeared, the surface is belted with a canvas or rubber belt. These belts usually are 6 to 12 in. wide and at least 2 ft longer than the width of the lane being paved. Belting should be done with a combined transverse and longitudinal motion. Care must be taken that the entire area is covered and that the edges of the belt do not cut into the surface. Some contractors have developed belting machines that are either manually or mechanically operated.

The final finish is usually given a concrete pavement surface by a burlap drag or a stiff broom. The drag consists of a strip of burlap drawn over the surface in a longitudinal direction. Two layers of burlap usually are employed, and they must be kept clean and wet to secure a proper finish. To insure that the same amount of burlap is in contact with the surface at all times, it is advisable to attach it to a bridge that may be pushed along the pavement.

A broomed surface is obtained by drawing a push broom transversely across the slab. If the pavement is built two-lanes-at-a-time, the brooming should be from the center to the edge in each lane. Brooms used for this purpose have

No clutter or confusion at paving site. Premixed concrete delivered by Dumpcretes ready for placing.

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Non-agitated Hauling Meets Every Test

On sections C-2 and C-3 of the Ohio Turnpike there's no clutter at the paving site. No paver, no water trucks, no men to run them.

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Here's the bonus. The single plant supplies concrete for bridges, culverts, walls and widening as well as paving.

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Central mixing plant located midway on job.

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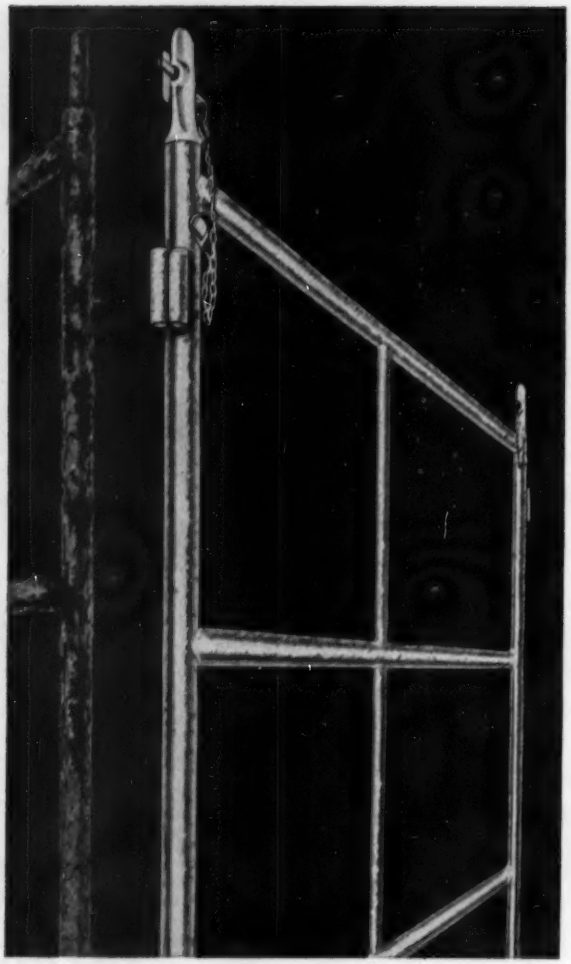

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in your scaffolding too!

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PAVING... Continued from page 185

MODIFIED FORM GRADER cuts a path to proper grade for a traveling form paver, a new type machine in which the forms are an integral part of the traveling paver.

bass or bassive fibers and are applied so as to leave uniform corrugations not more than 1/16 in. deep over the entire surface. Brooming must be done before the concrete has hardened sufficiently to be torn by the operation.

Forms should not be removed until the concrete is at least 12 hr old. Locks should be released, wedges knocked loose, and pins pulled before attempting to move the forms. Failure to take these initial steps may result in bent nonreusable forms. Many pieces of equipment have been developed to aid in this work. Most of these are truck-mounted cranes that operate from power take-offs and haul the forms to the location of the next setting.

Before reuse, all forms should be cleaned of concrete and oiled as described in the first article in this series. Care in handling of forms is essential to economy.

At the time forms are removed, the pavement surface should be tested for compliance with specifications for evenness. This usually is done by some forms of rolling straight-edge equipped with pins that scrape on high spots or otherwise bring to the attention of the inspector a lack of compliance with the specifications. Most specifications for primary roads require that no portion of the surface shall vary more than ⅛ in. from a 10-ft straight-edge.

At locations where the surface does not comply with these requirements, the concrete can be ground down. But grinding should not be carried to the point where the bond of the aggregate will be broken, nor should bushhammers or similar tools be used to remove irregularities.

Traveling Form Pavers

During the last few years there has been considerable interest in traveling form pavers. These machines consolidate and finish the concrete pavement between forms that are an integral part of the machine and move with it. Several successful machines have been developed.

In 1949, a machine developed by the Iowa Highway Department was used to pave 1½ mi of road in O'Brien and Cerro Gordo Counties in that state. In 1954, the machine was used to pave about 2 mi of road in Greene County.

This machine was self-propelled and consisted of a bottomless hopper, mounted on pneumatic tires. The concrete was deposited in the hopper and extruded through a curved throat at the rear to form a pavement slab 10 ft wide and 6 in. thick. Vibrators in the hopper assisted the movement of the concrete through the throat. The forms consisted of 6-in. channels inclined at an angle of 7 deg from the vertical to help hold the concrete in position. Although forms were only 11 ft long, there was very little slumping along the edges. This machine left a gap about 3 in. wide between lanes. This was filled with asphaltic material to form a permanent center stripe.

Other traveling form pavers have been built by contractors for use on particular projects. One

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JOYCE AIR MOTOR JACKS WITH TOE LIFT
JOYCE AUTOMATIC LOWERING JACKS

Pick any lifting job . . . you'll find there's a Joyce Jack that will fill the bill! For Joyce builds a complete line of ratchet, screw, hydraulic, air operated jacks, trench braces and material lifting equipment . . . to meet every lifting application. And you can depend on Joyce Jacks too . . . for Joyce top-quality products have been the by-word for lifting equipment since 1873!

. . . write for complete information today!

IN CANADA: Midland Foundry & Machine Co., Ltd., Midland, Ontario

THE JOYCE-CRIDLAND CO.
DAYTON 3, OHIO

contractor has built several machines, each incorporating certain refinements over the preceding model. They are, in effect, modified finishing machines mounted on long crawlers. The paver is supported on a 22 ft H-beam which rides on rollers between the crawler plates. The length of the machine tends to iron out any minor irregularities in the subgrade.

In the latest version now being produced for the market, a vibrating tube and tamper bar are installed ahead of a fixed screed. As the machine moves forward, the concrete is extruded under this screed and belted mechanically. Two 16-ft lengths of side forms are attached to the rear of each side of the machine and held the proper distance apart by light trusses. In this area the surface is straight-edged and belted if desired. A burlap drag attached to the end of the forms completes finishing operations.

On some later projects, the subgrade at the location of the crawlers on which the machine operates has been cut to proper grade by a form grader. A subgrader machine on crawlers also has been developed to follow the path trimmed by the form grader. These changes in operation have resulted in a much more even path for the paver crawlers and better control of pavement thickness.

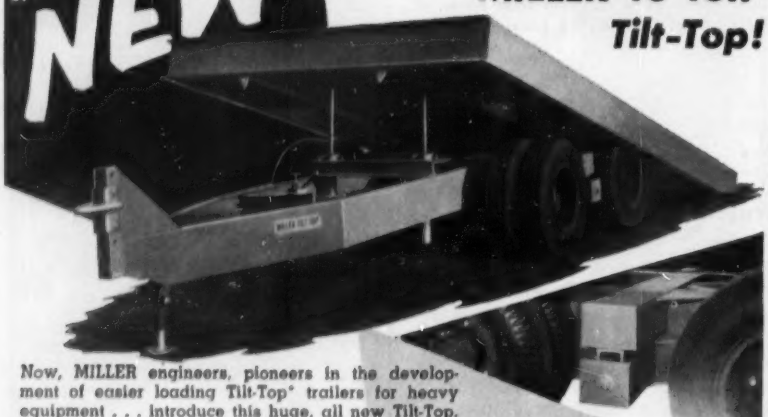
Addition of vibratory and tamping equipment and more careful preparation of the subgrade under the crawlers have resulted in a great improvement in the riding qualities of pavement built with this type of equipment. With this procedure, pavement specification requirements for smoothness of 3/16 in. in a 10-ft straight-edge can be met. To make allowance for possible edge slumpage, compliance with this provision is required only for that portion of the pavement more than 6 in. from the edges of the slab. Measured roughness of one project was 110 in. per mi. That is as good as some concrete pavements built by conventional methods.

Tiebars across the center-line can be placed by inserting them in the concrete ahead of the machine. A metal center joint with tiebars also can be installed. But the most practical method of constructing transverse or longitudinal joints on pavement placed with a traveling form machine is to saw them after the concrete has hardened.

At the present stage of development, there is no method by which this equipment can be used to construct pavements with mesh reinforcement. The installation of expansion joints and tie bars along the outside edges for tying additional lanes together also presents problems which have not been completely solved.

Nevertheless, the limited use of traveling from pavers has brought about extensive improvements in the machines and in the pavements constructed with them. Further advances in their design and operation seem to be inevitable.

announcing the NEW tandem axle MILLER 13 ton Tilt-Top!



Now, MILLER engineers, pioneers in the development of easier loading Tilt-Top* trailers for heavy equipment . . . introduce this huge, all new Tilt-Top.

Designed for easier, faster handling of such equipment as smaller shovels, Barber-Greene trenchers and finishers, backhoes and larger crawler tractors up to 26,000 lbs. gross weight . . . this new Tilt-Top* is massively built. A very low platform height, for this type of trailer, is achieved by placing the platform frame pivot point toward the rear of the tandem axle assembly . . . yet maintaining such perfect balance that it easily tilts under a man's weight.

Two inch oak, job proven for its durability and better climb traction, is used for decking the big 8' x 16'8" platform. Under the platform is a frame like a bridge . . . closely braced with 10" deep steel members along each side where the weight of tractor mounted equipment is carried.

Easier to back and maneuver . . . this super Tilt-Top* replaces the slower loading of more cumbersome trailers with ONE man, TWO minute loading . . . brings new time saving mobility to larger equipment. See the big, new "OT"-13 at your MILLER distributor today!

Heavy duty box section walking beam provides independent wheel action **on each side.** In contrast to straight-thru tandems, assuring less jarring and a more level ride on rough terrain. Walking beam shaft is one of the few equipped with trouble-free Timken roller bearings.

The pivot point of the long, heavy tongue is set way back at the rear set of wheels—providing tremendous double frame strength under the area of greatest load concentration.

The massive frame is honey combed with 8" deep lateral bracing members for rock solid decking support!

Miller Model "OT"-13 $3,280.00* F.O.B. Milwaukee
Complete with platform and eight 7.50 x 15 x 12 ply tires. Any optional equipment extra.
*Plus Freight and 8% Federal Tax

✓ built best
✓ priced best

See your MILLER distributor or write for FREE literature to:

Miller Tilt-Top Trailer Co.
457 S. 92nd St., Milwaukee 14, Wis.

CONCRETE WORK

Any contractor who does concrete work will find CM&E's series of articles on Concrete Mixing and Placing useful. Single reprints cost 50¢; the price for orders of 10 copies or more is 40¢ each. Address your order to the Editor.

S & M Construction Company, Providence, R. I., uses 12 of these Mack LJSWX diesel dumpers under 2-yard Lorain shovel in excavating peat bog near Atholl, Mass., on a by-pass for U. S. Route 20.

ONLY A SPECIALIST NEED APPLY...

. . . For only Macks can get in and out of mud like this under their own power!

Axle deep in soft, soupy mire and hauling a full load of heavy peat bog, 80% water, this Mack dumper will pull out of the muck and be on its way . . . and back again on schedule.

It's Mack's famous Balanced Bogie, along with Mack's exclusive Power Divider, that makes seemingly impossible tasks like this everyday assignments for Macks. This wonder-working team delivers torque to each wheel in proportion to its traction. In addition, it assures uniform tire loading and braking on all four rear wheels, and maximum stability under any terrain or road conditions.

When you add the Balanced Bogie and Power Divider to Mack's rugged construction, ease of maintenance, and economy of operation, you'll see why Macks are the most versatile trucks, the biggest money makers in the construction industries today. See your Mack Branch or Distributor for complete details. Mack Trucks, Empire State Building, New York 1, N. Y.

MACK . . . *first name for trucks*

3569

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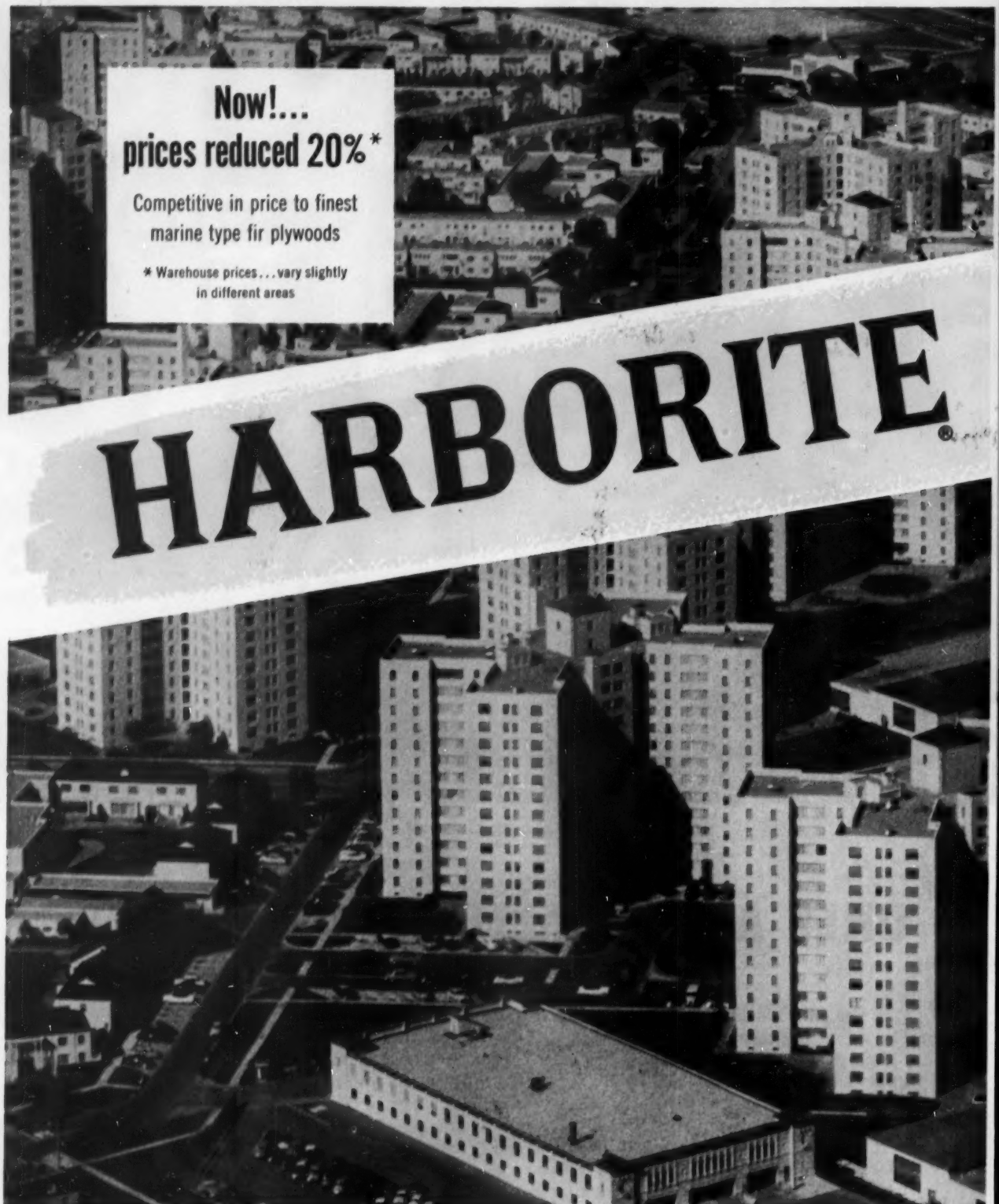

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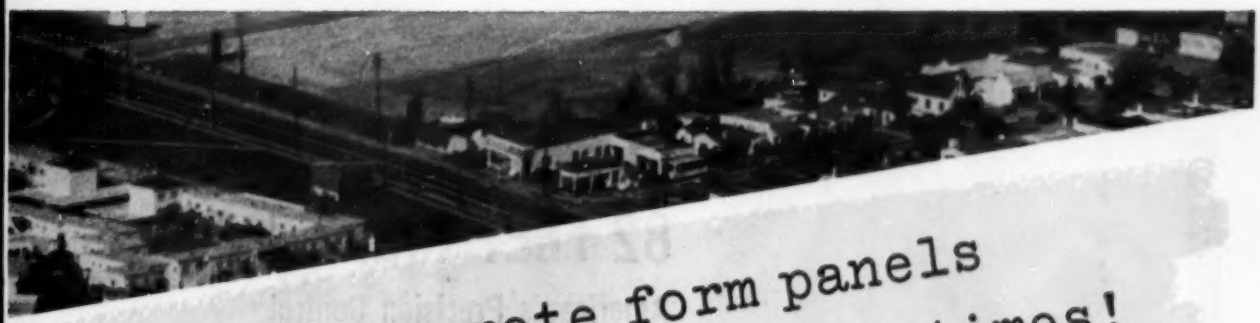
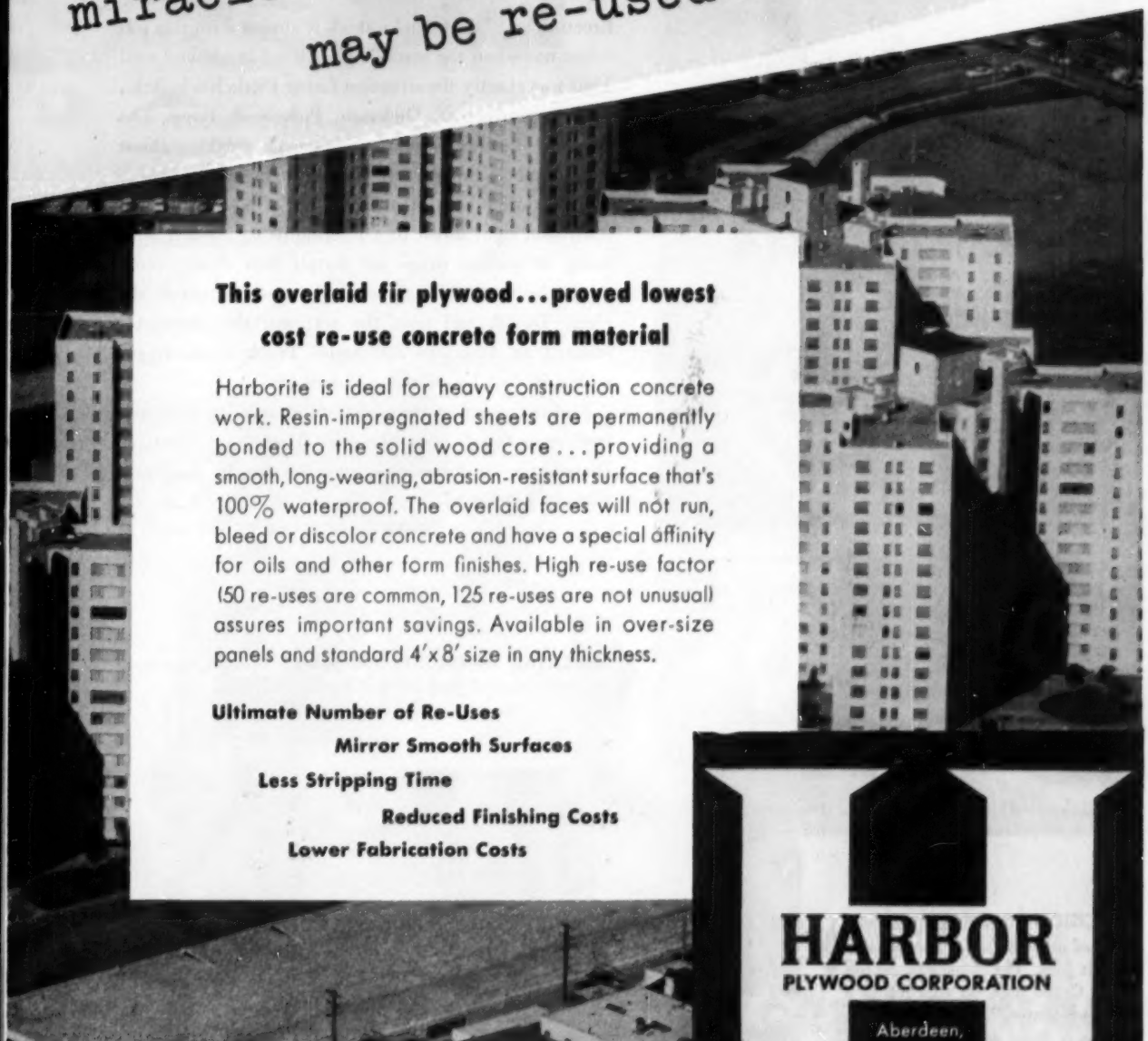


miracle concrete form panels may be re-used 125 times!



This overlaid fir plywood...proved lowest cost re-use concrete form material

Harborite is ideal for heavy construction concrete work. Resin-impregnated sheets are permanently bonded to the solid wood core . . . providing a smooth, long-wearing, abrasion-resistant surface that's 100% waterproof. The overlaid faces will not run, bleed or discolor concrete and have a special affinity for oils and other form finishes. High re-use factor (50 re-uses are common, 125 re-uses are not unusual) assures important savings. Available in over-size panels and standard 4'x8' size in any thickness.

Ultimate Number of Re-Uses

Mirror Smooth Surfaces

Less Stripping Time

Reduced Finishing Costs

Lower Fabrication Costs

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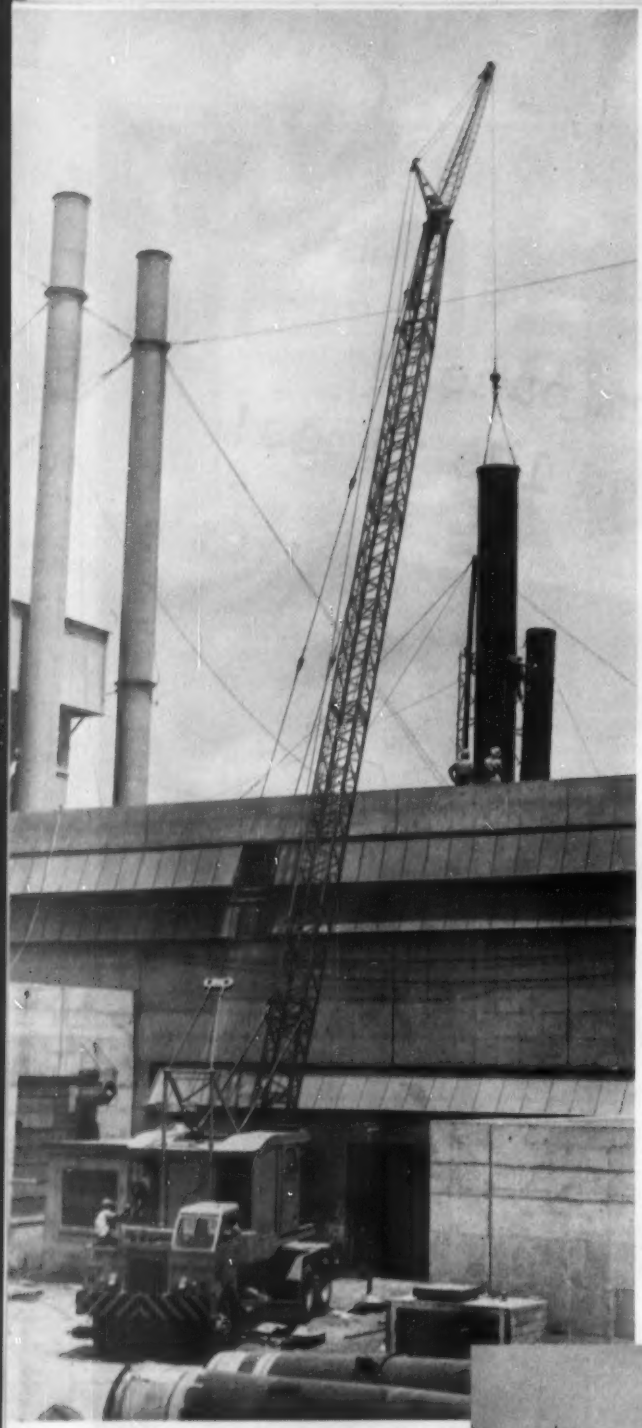


CONTRACTOR SETS GLASS COATED STACK 82 FEET HIGH

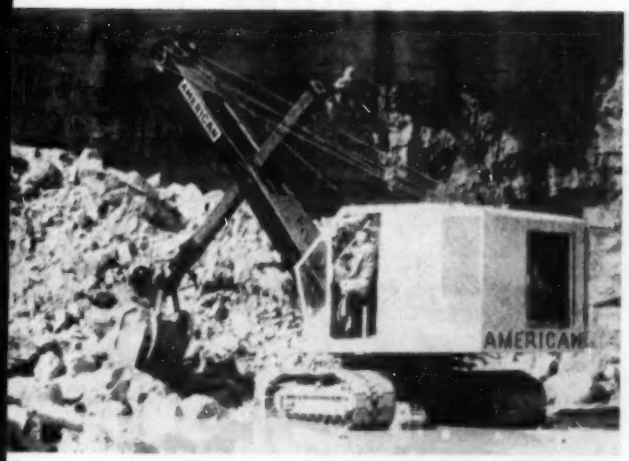
American's Precision Control Used to Spot Fragile Sections

Erecting an 82-foot smoke stack is almost a routine job—but not when the stack is glass lined inside and out! That was exactly the situation facing Little Rock, Ark., general contractors, Dickman, Pickens & Bond. The stack was in four 20-foot sections, each weighing about 2,800 pounds. Juggling these heavy, highly breakable parts required a long reach and lots of power precisely controlled right down to a fraction of an inch. A wide swing or sudden drop—no matter how short—could grind the sections together and smash or crack the glass. To lift and spot the sections, the contractor selected an American 300 Series Truck Crane rigged with a 95-foot boom and a 35-foot jib.

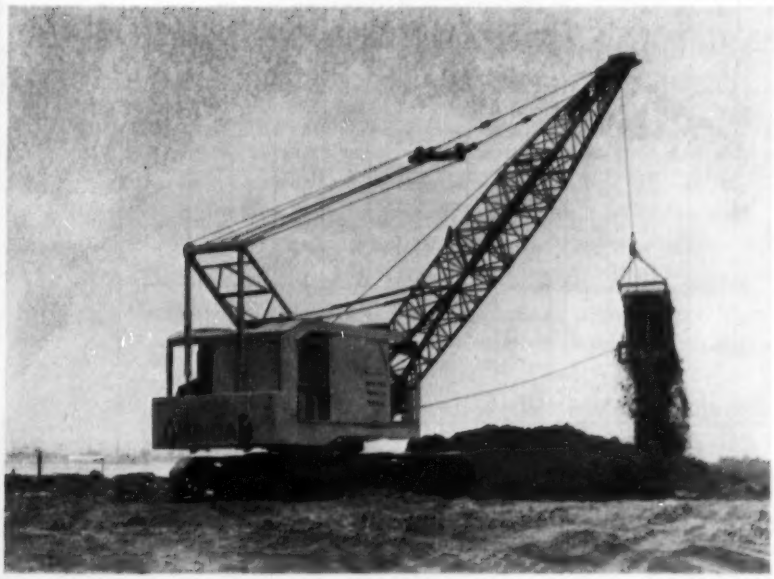
Profits depend on the ability to do any job right and fast, even tough ones like this. Visit your American Distributor—find out how your job can be done best with an American!

VERSATILE AMERICAN 300 SERIES Truck Crane spots second section of glass covered stack.

"PRECISION CONTROL with a minimum of operator effort speeds even difficult jobs. The American 30-ton Truck Crane used on this job is a real performer," says Dickman, Pickens & Bond construction superintendent Ollie Shullenbarger. "The American Truck Crane has exceeded our best expectations and we are very well pleased with its performance," he added.



TOP PRODUCTION at low initial cost and low operating cost. That's the standard ¾-yard American 200 Series Crawler Crane. Big crane design and construction means long life—minimum downtime for this ground-hugging workhorse. As a truck crane, capacity of the 200 Series is 20-tons!



THE AMERICAN LINE of dependable crawler cranes starts with this ½-yard capacity 100 Series. Its low cost is as surprising as its versatility with any front—dragline, shovel, backhoe or crane. It's easier to transport from job to job and it's more efficient on the job! The 100 Series Truck Crane rates 12½ tons capacity.

PACE SETTER in the American Series is the big, tough 700! Its finger-tip air controls make it move faster—produce more than you'll think possible. Capacities: 2-yard dragline; 1½-yard rock shovel and backhoe. For steel erectors, 50 tons crawler and 45 tons capacity on rubber.

American products perform hundreds of different jobs throughout the world everyday. Years of experience in designing and manufacturing cranes, derricks and hoists of top efficiency and long dependable life stand back of your American purchase. You are assured of the best in machine design, from every angle, when you turn to American!

AMERICAN HOIST

& Derrick Company

St. Paul 1, Minnesota

TRACTOR-DRAWN SCRAPERS—1956 ...A CM&E Feature

	MAKE AND MODEL	Recommended Tractor, DBHP	Struck Capacity, Yds.	Heaped Capacity, Yds.	Capacity, Tons	Control	Type of Ejection	Price, FOB, Factory	Width of Cut, In.	Depth of Cut, In.	Depth of Spread, In.	Apron Opening, In.	Width of Non-Skid Tires, In.	Weight Distribution: % on Front Wheels, Empty	% on Rear Wheels, Empty	% on Front Wheels, Loaded	% on Rear Wheels, Loaded	Length, In.	Width, In.	Height (Blade on Ground) In.	Bottom Dimension, In.	Height of Sides, In.	Wheel Base, In.	Standard Tires, Front	Standard Tires, Rear	Gauge, Front	Gauge, Rear	Weight, Shipping	
	GENERAL DATA								**PERFORMANCE DATA**										**DIMENSIONS, OVERALL**										
	ALLIS-CHALMERS																												
1	AC-44		4	4.7		Hyd.	Forced Positive	3,640	76	7	12	74	216	45	55	45	55	271	93	68			165	11x20	11x20	55 1/4	64	6,595	1
2	AC-106		6.1	7.5		Cable		6,065	93	9	17	–	264	45	55	45	55	292	112	77	38x93	38	168	14x20	14x20	58 1/2	76 3/4	10,300	2
3	AC-108		8.4	11		Cable		8,250	102	10	18	92	288	45	55	45	55	328	124	92	44x102	42	195	16x20	16x20	68	84	15,250	3
4	AC-315		15	20		Cable		12,500	116	10	20	102	336	45	55	45	55	401	139	110	49x116	60	210	21x24	21x24	76	89 3/4	25,850	4
	AMERICAN																												
5	H-61	25–60	4.4	6	6.6	Hydraulic	Positive Roll	3,864	84	6	14	40	234	45	55	42	58	262	90	76	32x84	38	158	6.5x20	6.5x20	51 1/2	72	7,200	5
6	H-65	30–50	5.2	7	7.7			4,046	84	6	14	40	234	45	55	42	58	282	90	76	32x84	43	158	6.5x20	7.5x20	51 1/2	72	7,400	6
7	H-85	50–70	7	9	9.9			5,342	103	6	14	41	252	42	58	40	60	292	112	87	36x103	43	166	11x20	9x20	62	86	10,000	7
8	H-91	50–90	8	10	11			5,769	108	6	14	41	252	42	58	40	60	292	112	87	32x103	49	166	14x20	9x20	62	86	10,300	8
9	H-130	85+	10.5	14	15.4			6,330	120	7	16	48	340	42	58	40	60	344	130	101	43x120	50	210	16x24	16x24	68	100	18,890	9
10	H-150	100+	13	17	18.7			8,790	120	7	16	48	340	42	58	40	60	344	130	101	43x120	60	210	16x24	18x24	68	100	19,500	10
	BE-GE																												
11	ST-756	40–60	4.2	5.6	6.45	Hydraulic	Forced Roll Out	4,334	84	15	13	42 1/2	228	48	52	48	52	269	102	73	36x84	38	160	11x20	11x20	46 5/8	71 3/8	8,400	11
12	ST-767	40–60	5.3	6.7	7.6			4,444	84	15	13	42 1/2	228	47	53	47	53	269	102	73	36x84	48	160	11x20	14x20	46 5/8	71 3/8	8,550	12
13	ST-8560	50–70	6.7	9	10.3			6,410	102	13	14	52	252	48	52	48	52	319	121	74	42x102	43	188	14x20	14x20	58	83	12,360	13
14	ST-85105	50–70	8.2	10.5	12			6,795	102	13	14	52	262	47	53	47	53	319	121	74	42x102	49	188	14x20	16x20	58	83	12,710	14
15	ST-85120	60–95	8.5	11.7	13.4			7,897	102	11	16	56	286	48	52	48	52	354	123	86	48x102	46	213	16x25	16x25	66	80	15,900	15
16	ST-85140	60–95	10.5	14	16.1			8,240	102	11	16	56	286	47	53	47	53	354	123	86	48x102	58	213	16x25	18x25	66	80	16,325	16
	CATERPILLAR																												
17	No. 60	75	7	9	11.5	Cable	Forward Positive		92	11	13 1/2	54	264	45	55	40	60	338	112	93	40x92	47	202	14x20	16x20	62	71	13,767	17
18	No. 70	102	10.2	12.5	16.5				102	12	14 1/2	58	300	42	58	40	60	376	125	103	45x104	55	226	16x24	21x25	65	75 1/2	20,436	18
19	No. 463	155	18	25	27.5				124	Not Limited	20	71	348	42	58	41	59	456	141	134	58x120	58	278	21x25	24x29	72 1/2	86 3/5	30,749	19
20	No. 90	155	21.2	27	35				120		16	70	384	43	57	40	60	478	144	126	65x120	71	304	24x29	27x33	81	86	37,939	20
	INTERNATIONAL-HARVESTER																												
21	B-113	103	10	14		Cable	Positive Rolling	11,936	108	10	20		351	42	58	42	58	392	132	127			241	18x25	21x25	70	86 3/4	21,900	21
22	B-170A	160	16	21				17,227	119	10	21		360	42	58	42	58	432	147	145			266	21x25	24x29	72	96 1/2	32,700	22
23	B-250	160	22	27.5				20,763	120	10	22		375	42	58	42	58	494	150	150			310	24x33	27x33	82	94	42,700	23
	LE TOURNEAU-WESTINGHOUSE																												
24	DT	70	8.1	10.5	14	Cable	Forward Positive	7,680	102	8	20 1/2	50		43	57	45	55	354	124	106	41x102	40	196	16x20	16x20	63	86	15,500	24
25	CT	90	12.2	16	19			9,870	102	22	18	77		43	57	45	55	390	128	113	59x102	53	227	18x24	18x24	65	84	21,300	25
26	BT	150	14.4	19	23			12,240	120	22	21	84		43	57	45	55	408	151	135	59x120	53	242	21x25	21x25	95	97	27,500	26
27	AT	175	24	28	38			17,420	114	24	24	78		43	57	45	55	492	142	146	81x114	66	287	24x29	24x29	95 1/2	93 1/2	39,000	27
	SOUTHWEST																												
28	S-675	45–55	6	7.5	10	Cable	Positive Rolling		90	10	12 1/2	37	264	50	50	40	60	314	105	87		48	174	14x20	14x20	46	70	11,000	28
29	S-811	65–75	8	11	15				99	10	15	42	281	50	50	40	60	343	114	101		54	192	16x20	16x20	52	76	15,000	29
30	S-125	70–95	12	15	20				108	10	16	48	314	50	50	40	60	377	124	112		66	222	16x24	16x24	60	84	20,200	30
31	S-158	90+	15	18	25				120	10	18	53	342	50	50	40	60	410	141	120		72	240	21x24	21x24	70	94	26,500	31
	WOOLDRIDGE																												
32	OS-80	18,000[A]	8	10.5	11.2	Cable	Pivot Tilt	7,905	92	15	16	59 1/2	294	47	53	44	56	339	110	94			200	16x20	18x25	60	72 3/4	15,000	32
33	OS-100	24,000	12.5	15	18			10,600	102	14	21	69	302	47	53	46	54	359	121	102			217	18x25	18x25	60	81 3/4	21,300	33
34	OS-152	33,000	15.1	18	23			14,000	111	16	25	81	305	47	53	44	56	403	133	117			239	21x25	24x25	70	80 3/4	29,800	34
35	OS-200	36,000	20	25	30			19,700	120	18	22½	84	378	47	53	44	56	435	142	120			268	29.5x25	29.5x29	77 3/4	89 3/4	40,000	35
36	OS-260	36,000	26	32.5	45			26,000	120	20	23½	112 1/2	424	47	53	45	55	470	143	147			299	29.5x29	33.5x33	80	91	51,000	36
37	OS-300	50,000	34	41	52			33,000	120	21	21	110	433	47	53	45	55	491	143	150			315	33.5x33	37.5x33	80	86 3/4	61,000	37

[A] – Tractor drawbar pull, lbs.

ALLIS-CHALMERS MFG. CO., TRACTOR DIV., BOX 512, MILWAUKEE, WIS.
AMERICAN TRACTOR EQUIPMENT CO., SAN LEANDRO BLVD., OAKLAND, CAL.
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A Super Grader for Super Jobs

IT'S "PUSH-POWER" AT THE BLADE THAT COUNTS

The world's largest Motor Grader

WEIGHS 40,125 Lbs.

GALION'S T-700 GRADE-O-MATIC* GIVES YOU TOMORROW'S PERFORMANCE NEEDS TODAY!

Its massive weight of 40,125 lbs. is balanced to permit its mighty 190 horsepower to produce tremendous "push-power" at the blade. This "push-power" at the blade means most in work production, fast cycles, and ease of operation unmatched by any other grader.

The Galion GRADE-O-MATIC* Drive makes top grader performance practically an automatic achievement. No tiresome old-type gear shift or foot clutch to operate. Effortless power shifting can be done on the go—in either direction. Engine speed AUTOMATICALLY adjusts to working or travel speed. Up to 340% torque multiplication of engine driving force is AUTOMATIC, as needed.

* Utilizing a Torque Converter with Tail Shaft Governor and Power-Shift Transmission.

Every part of this GALION Super-Grader is larger, heavier, stronger, more efficient. It has been engineered to give you correct balance of weight, power, and blade pressures to produce maximum "push-power" at the blade — where power means most to move more material, in quicker cycles, with less operator fatigue.

Correct balance of power and weight in the T-700 means that its 190 h.p. can be utilized without useless, costly spinning of the drive wheels — a very important point to remember when studying the work production value of a motor grader.

You'll never believe a Galion GRADE-O-MATIC Grader does so much until you own one and put it to work.

ESTABLISHED GALION 1907

MAIL THIS COUPON FOR COMPLETE INFORMATION

THE GALION IRON WORKS & MFG. CO.
GALION, OHIO, U.S.A.

THE GALION IRON WORKS & MFG. COMPANY
Dept. CM-46, Galion, Ohio, U. S. A.

Please send me literature on the GRADE-O-MATIC Graders checked.

☐ Model T-700, 190 H.P. (Illustrated)
☐ Model T-600, 140 H.P. ☐ Model T-500, 125 H.P.

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Specs for Your Files...

		GENERAL						PRIME MOVER																
													MAXIMUM SPEEDS											
		Struck Capacity, Yds.	Heaped Capacity, Yds.	Tons, Capacity	Width of Non-Slip Tires, In.	Scraper Control	F.O.B. Factory Price	Engine, Make & Model	Horsepower	Rated RPM	No. of Cylinders	Piston Displacement, Cu. In.	1st	2nd	3rd	4th	5th	Reverse	Starting Method	Brakes, Sq. In. Contact Area	Clutch Size, In.	Oil in Crankcase, Qts.	Cooling System Capacity, Qts.	Fuel Tank Capacity, Gal.
	ALLIS-CHALMERS							A-C																
1	TS-200	10	13		508	Hyd.	27,865	TD-779	176	1800	6	779	2.5	4.9	9.1	16.1	21.6	2.5	Elec.	870	17	28	60	70
2	TS-360	15	20	25	590	Cable	37,175	A-C TDS-844	280	2100	6	844	3.0	6.1	11.3	20	.....	3.1	Elec.	1400	17	28	72	135
	CATERPILLAR																							
3	* No. 15 (DW-15 Tractor)	10	12.5	16.5	408	Cable		CAT	186	1800	6	805	3	5.6	9.3	14.9	24	3.3	Electric or Gas Engine	1330	16	33	80	75
4	* No. 456 (DW-20 Tractor)	18	25	27.5	456			CAT	300	1800	6	805	3.6	7	11.5	19.5	32.1	4.7		1448	16	33	90	90
5	No. 470 (DW-21 Tractor)	18	25	27.5	432			CAT	300	1800	6	805	2.3	4.5	7.4	12.5	20.5	3		1448	16	33	90	100
	EUCLID							GM																
6	S-7	7	9	10.5	336		21,350	4-71	143	2100	4	284	2.4	4.5	8.7	15.2	21.9	2.4		840	15	20	36	54
7	S-12	12	16	20	374		32,350	GM 6-71	216	2100	6	426	2.7	5.3	10.2	18.0	28.2	3.6		1072	15 1/2	23	43	84
8	* 77FDT-18SH	12	16	20	396		31,250	GM 6-71	218	2100	6	426	2.7	5.3	10.2	17.8	28.0	3.5		1072	15 1/2	23	57	62
9	* 22 TDT-21SH	15.5	21	24.7	456		39,975	GM 6-110	300	2000	6	660	3.4	5.7	9.9	17.3	26.9	4.5		1072	17	40	65	154
10	* 23 TDT-21SH	15.5	21	24.7	456		42,965	GM 6-110	300	2000	6	660	(Low 7.5)		Torque Converter (Int. 13.8)		(High 30.1)			1072	(A)	40	65	154
11	S-18	18	25	30	436		47,600	GM 6-110	300	2000	6	660	(Low 5.5)		Torque Converter (Int. 10.9)		(High 21.4)			2360	(A)	40	77	158
12	** TS-18	18	25	30	436		61,200	GM 6-71	218	2100	6	426	(Low 5.9)		Torque Converter (Int. 11.3)		(High 25.5)			2360	(A)	40	77	158
13	** 16TDT-23SH	18	24	30	456		58,315	GM 6-71	194	1800	6	426	(Low 7.6)		Torque Converter (Int. 13.8)		(High 31)			1072	(A)	23	67	100
	INTERNATIONAL-HARVESTER							Cummins																
14	55	10	14	21	500	Cable	28,275	HRB-600	172	1800	6	743	2.8	5.1	8.6	14	23.7	2.8	Electric	1230	17	28	48	80
15	75	15	20	27.5	559		36,595	Cummins NTO-681	262	2100	6	743	2.7	4.6	7.9	15.2	23.8	2.4		1491	17	28	48	105
	LE TOURNEAU-WESTINGHOUSE							G-M																
16	D	6.6 B	7.5 B	9	312	Finger-Tip Electric	18,980	4-71	138	2000	4	284	3.2	6.1	11.9	20.7	29.5	3.2		2822	14	16	34	48
17	C (Sliding gear)	12.2	18	20	391		31,260	GM6-71 or Cummins HBIS-600	208	2000	6	425	2.9	6.2	10.8	19	29.9	3.8	Electric	3840	17	20	56	100
18	C (Constant mesh)	12.2	18	20	391		33,280	Cummins HBIS-600	208	2000	6	425	2.2	5.0	11.4	26.1	.....	11		3840	(A)	20	56	100
19	B	18	25	30	445		43,980	Cummins NHRBIS-600 or GM6-110	293	2000	6	743	3.5	6.9	13.4	23.4	28.6	3.5		7536	15.5	48	84	147
	WOOLDRIDGE							GM																
20	T-70	7.5	10	13	321		22,500	4-71	143	2100	4	283.7	3.6	6.6	13	22.6	30	3.6		960	13	12	28	55
21	TH-090B	12.2	15	17.5	398	Cable	31,300	Cummins HRBB-600	180	2100	6	743	3.1	6.2	11.6	20.4	.....	3.1	Electric	1240	17	27	44	80
22	TH-0142	14.1	18	20	415		37,400	Cummins HRBISD-600	225	1800	6	743	4	6.6	11.3	19.8	32.2	5		1240	17	27	44	85
23	* T4-200	20	26	28	655		44,300	Cummins NHBISD-600	275	2100	6	743	3.5	6.8	12.5	24.2	32.3	7.7		1280	15 1/2	48	68	85

* – Two-Axle Tractor
** – Twin Power Units. Engine Specifications are for each Engine.
A – Torque Converter
B – With Factory Installed Sideboards

				OVERALL DIMENSIONS																		
Width of Cut, In.	Depth of Cut, In.	Depth of Spread, In.	Type of Ejection	Length, In.	Width, In.	Height, In.	Height of Sides, In.	Bottom Dimensions, In.	Wheel Base, In. (Drive to Rear)	Standard Tires, Tractor	Standard Tires, Scraper	Gauge, Drive Wheels, In.	Gauge, Scraper Wheels, In.	Weight, Shipping	Weight Distribution % on Drive Axle, Empty	% on Scraper Axle, Empty	% on Drive Axle, Full	% on Scraper Axle, Full	Ejector Cable Size, Dia.	Bowl Lift Cable Size, Dia.	Apron Lift Cable Size, Dia.	
102	9	17	Positive Forced	395	131	113	51	52x102	229	21x25	21x25	81	74	38,600	66	34	50	50	–	–	5/8	1
116	Unl.	20		438	138	122	60	56x116	268	24x29	24x29	92	87.5	49,050	66	34	50	50	1/2	1/2	3/4	2
102	12	13.7	Forward Positive	466	125	106	55	45x102	232.5	12x20 21x25	21x25	70.5	75.5	42,370	66	42	40	46	1/2	1/2	5/8	3
124	Unlimited	20		526	141	132	58	69x120	282	14x24 29.5x29	29.5x29	88	88	57,100	65	42	37.5	48.5	1/2	1/2	3/4	4
124		20		499	141	132	58	69x120	307	29.5x29	29.5x29	88	88	57,320	67.5	32.5	52	48	1/2	1/2	3/4	5
82	10.5	20	Positive Roll Out	358	96	100	48	86x82	214	18x25	18x25	73	73	26,590	69	31	55	45	–	–	1/2	6
117	14	27		423	134	115	47	102x117	261	26.5x25	26.5x25	80	89.5	45,170	66.3	33.7	53	47	–	–	3/4	7
115	15	29		490	132	112	52	98x115	255	12x24 21x25	21x25	79	84	45,980	38.8	36	39.5	45	–	–	1/2	8
120	14	33		534	138	123	55	111x120	276	12x24 24x25	24x25	79	84	56,300	40.9	33.1	43	42	–	–	3/4	9
120	14	33		534	138	123	55	111x120	276	12x24 24x25	24x25	79.5	90	56,900	48.1	32.7	43	42	–	–	3/4	10
120	13.5	24		482	139	132	59	120x120	308	27x33	27x33	91	91	68,400	66.8	33.2	55	45	–	–	3/4	11
120	13.5	24		526	139	132	59	120x120	308	27x33	27x33	91	91	77,200	56.4	43.6	52	48	–	–	3/4	12
120	14	33		577	138	112	64	111x120	270.5	12x24 24x25	27x33	79.5	90	68,000	33.6	48	35.1	53.7	–	–	3/4	13
109	Unlimited	19	Positive Ram	408	130	112	49	46x108	233	21x25	21x25	74	86	39,500	65	35	55	45	1/2	1/2	–	14
116		21.5		472	138	122	59	56x114	279	24x29	24x29	80	91	53,500	65	35	55	45	9/16	9/16	–	15
84	Unlimited	22.5	Forward Positive	337	100	94	53	50x84	188	18x25	18x25	78	77	21,700	71	29	60	40	1/2	1/2	1/2	16
114		16		447	136	121	47	60x114	268	26.5x25	26.5x25	80.8	86	40,200	66	34	53	47	5/8	5/8	3/4	17
114		16		447	136	121	47	60x114	268	26.5x25	26.5x25	80.8	86	40,860	66	34	53	47	5/8	5/8	3/4	18
120		20		486	140	154	54	77x120	281	27x33	27x33	96	92	67,400	64	36	53	47	5/8	3/4	3/4	19
87	15	21.5	Pivot Tilt	358	102	104	47	85x87	216	18x25	18x25	76	66	31,500	71.3	28.7	59	41	1/2	1/2	9/16	20
102	16	21		405	121	113	58	90x102	252	21x25	21x25	100	82	43,900	69	31	56	44	1/2	1/2	5/8	21
111	16	25		429	133	120	60	99x111	263	24x25	24x25	99	81	50,300	66	34	54	46	1/2	1/2	5/8	22
120	18	22		504	142	119	65	121x120	268	14x24 29.5x29	29.5x29	94	92	63,400	46	34	42	45	1/2	1/2	3/4	23

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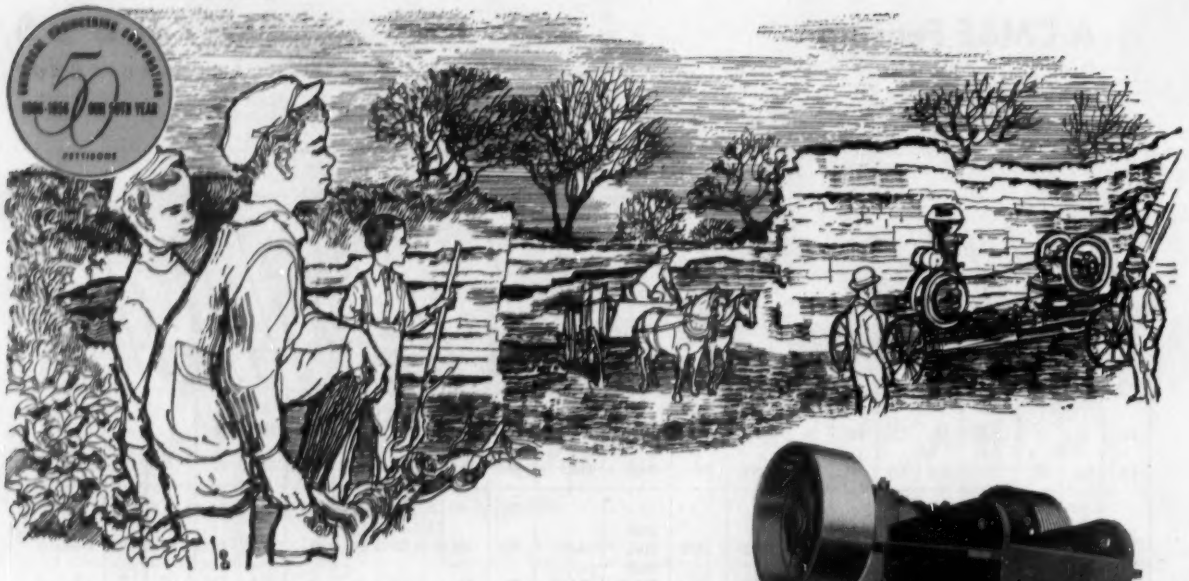

TO THE BOYS WHO PLAYED IN THE QUARRIES IN 1906

Remember those carefree, boyhood days when you romped through the old stone quarry? Limestone cliffs were towering castle walls in young imaginations. Rock piles were western forts to hold against the Sioux.

The day they brought in the new crusher, you stopped your games to watch as the engine chugged to life. To you it was just another piece of machinery — and a wonderful target for stones when the men had gone. But the echoes barking off quarry walls that day were crying the birth of a new industry. Modern roadbuilding had arrived!

Some of you never quite got the quarry out of your systems. You became quarry men and roadbuilders yourselves; and while you grew to manhood, the crusher you saw that day matured with you.

It was a German immigrant, E. A. Velde, who began its manufacture at Cedar Rapids, Iowa, in 1906. He combined the best feature of the Dodge crusher — a large bite at the receiving end of the jaw — with that of the Blake crusher — a large bite at the finishing end of the jaw. The result was the Universal overhead eccentric jaw crusher with "force feed" action — to deliver a dependably uniform product.

When America transformed her dirt roads into ribbons of concrete during the early 1900's, the uniformity of this crushed product created a huge demand for the Universal crusher and it was sold in carload lots the world over.

From this beginning, Universal became the producer of the most complete line of portable crushing, screening, washing and loading equipment in the industry. Today, Universal offers the largest overhead eccentric jaw crusher on the market. The Universal 4448 — a product of 50 years in engineering design and manufacturing experience.

The boys who played in the quarries in 1906 and the Universal crusher came a long way together. Many more since then have grown up with the roadbuilding industry and like the men who laid our first highways have come to know and respect the quality of Universal equipment.

To these men, who demand crushing equipment soundly conceived, expertly designed and precisely engineered, we pledge they will find the products of the Universal Engineering Corporation as unexcelled for performance and reliability in the future as they have been in the past.

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UNIVERSAL ENGINEERING CORPORATION

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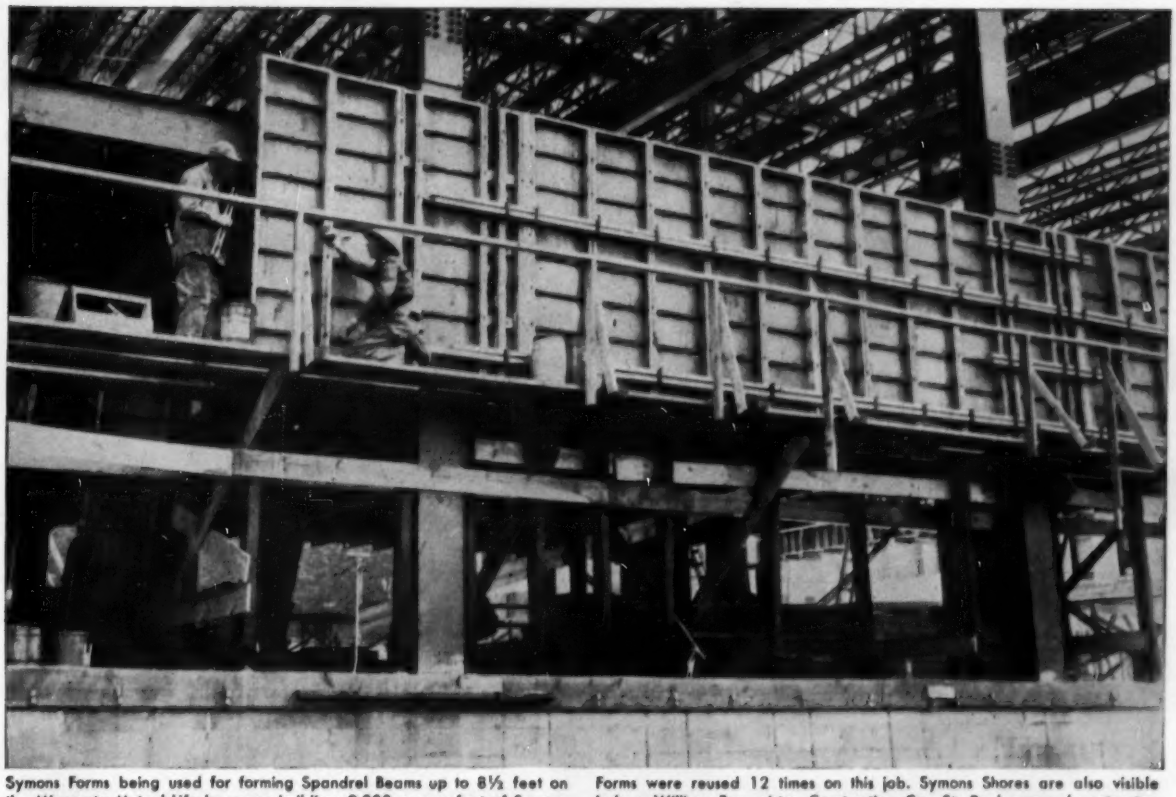

Symons Forms being used for forming Spandrel Beams up to 8½ feet on the Minnesota Mutual Life Insurance building. 9,000 square feet of Symons Forms were reused 12 times on this job. Symons Shores are also visible below. William Baumeister Construction Co., St. Paul, general contractor.

Contractor Cuts Two-Thirds off Forming Costs of Spandrel Beams with Symons Forms

Because of the efficient combination of Symons forming, shoring and scaffolding methods, the contractor was able to cut his estimated cost by two-thirds on the $2,000,000 home office building of the Minnesota Mutual Life Insurance Company of St. Paul, Minnesota.

In addition to savings in labor cost, considerable time was saved in forming the Spandrel Beams of this 9-story building. Sidewalk superintendents looking out of windows of the many surrounding office buildings could see real progress day after day. Forms were walked in place as efficiently as though they were on a footing on the ground. The adaptability of Symons Shores with their safe "T" heads speeded the forming and scaffolding work. The combination of forms, shores and scaffolding was the result of recommendations made by the Symons fieldmen.

All foundation walls are 16 feet in height. Note the use of only three walers.

This is the second of the big, new life insurance structures in the Twin Cities using Symons Forms for the concrete construction. It is the first of its size in St. Paul using a structural steel skeleton with standard and clear span joists, with its decking of corrugated steel sheeting covered by concrete. 2 x 8 ft. Symons Steel Rib Forms were used to frame 56,000 square feet of spandrel beams. Symons Shores were used throughout in beam construction. All foundation walls are 16 feet in height.

Symons Engineering and Customer Service also played an important role in this project. The Symons Engineering Staff furnished complete form layouts and job cost sheets on the form work—at no charge to the contractor. This service enabled the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Symons fieldmen gave regular on-the-job service. First, by on-the-job recommendations of forms and hardware needed. Second, by showing the workmen how to set up the forms efficiently. Third, by being available and giving service on last minute requirements.

View of a spandrel beam after Symons Forms have been removed.

Symons Forms, Shores and Column Clamps can be rented with purchase option. All rental charges apply on the purchase price, during a 60-day period.

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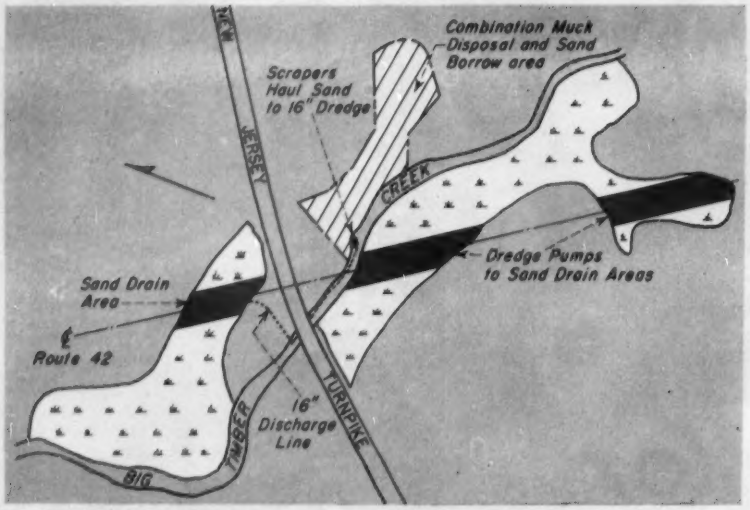
DREDGE sucks up sand and pumps through 16-in. line. It is powered by 1,200-hp diesel.



SAND in high borrow pit is excavated by scrapers, hauled to edge of creek, pumped on to swampy highway right-of-way, and built into thick sand-drain blanket.

Scrapers Feed Sand Fill to Dredge

AN INGENIOUS application of an hydraulic dredge is making money for Public Constructors, Inc., Pleasantville, N. J., on their big highway job near Camden, N. J.

Scrapers shave sand from a high borrow pit and haul it a short distance to a river's edge. There, a 16-in. dredge sucks it up and pumps it on to three swampy areas, one at a time. Sand is built into a 4½-ft thick blanket in preparation for driving sand drains. The method is fast, cheap, and efficient.

Public's scheme surprised a lot of people, especially other contractors who bid the job. Most of them had figured on trucking the material from pits a considerable distance away. Several contractors had even taken spot borings on the 24-acre area that Public is now tapping but concluded that the sand was not of the proper quality and was considerably less than the required amount.

Public's closest bidder had an adjoining section of highway which he was building with fill pumped in from a large dredge in the Delaware River. He figured on stockpiling dredged sand on this job and then trucking it a short distance to the new job. This was a tough method to beat.

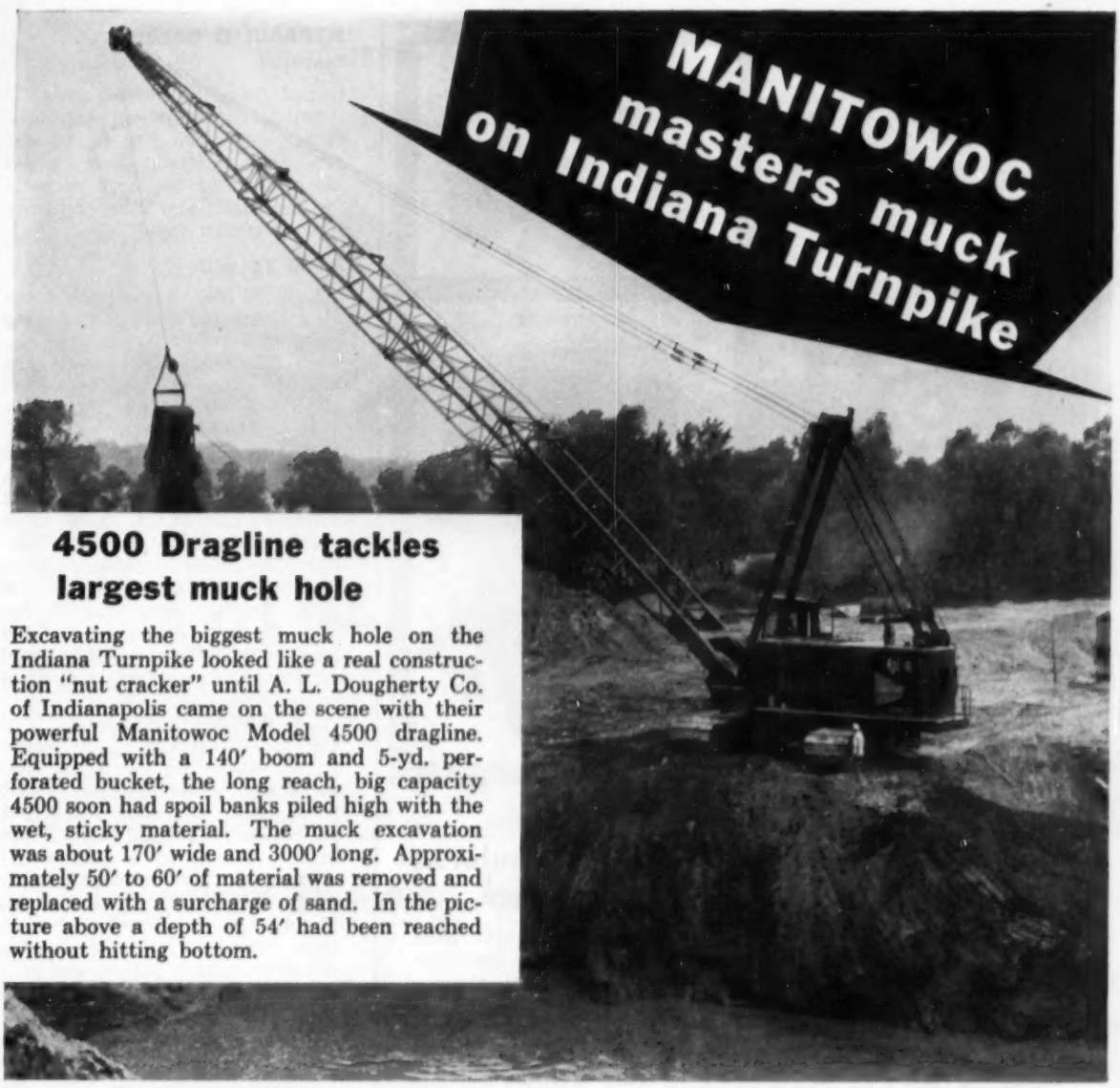
But Ray Fisher, president of Public Constructors, is a thorough investigator. He had an idea there was plenty of sand in the 24-acre area near the river and assigned a crew to cover it with borings. The results were conclusive. Sand lay in an irregular pattern of pockets, but it was there—lots of it.

Two questions remained—would it meet specifications, and could it be moved economically to the site. Both questions had the same answer — hydraulic dredging. It would be the best way to distribute the sand over the muck, and placing the sand this way would wash out an excess of fines which would have prevented the sand from meeting specifications.

But the dredge could not operate in a conventional manner. Sand deposits covered ground that was too high to flood. Instead, Fisher planned to station the dredge at a cove in the river where a fleet of scrapers could feed it with sand

(Continued on page 202)

FLEET of six C-Tournapulls hauls sand from pockets in borrow area to dredge. Depleted pockets serve later as disposal areas for 60,000 yd of pumped muck excavation.



MANITOWOC masters muck on Indiana Turnpike

4500 Dragline tackles largest muck hole

Excavating the biggest muck hole on the Indiana Turnpike looked like a real construction "nut cracker" until A. L. Dougherty Co. of Indianapolis came on the scene with their powerful Manitowoc Model 4500 dragline. Equipped with a 140′ boom and 5-yd. perforated bucket, the long reach, big capacity 4500 soon had spoil banks piled high with the wet, sticky material. The muck excavation was about 170′ wide and 3000′ long. Approximately 50′ to 60′ of material was removed and replaced with a surcharge of sand. In the picture above a depth of 54′ had been reached without hitting bottom.

You need outstanding Dragline performance for tough jobs like this

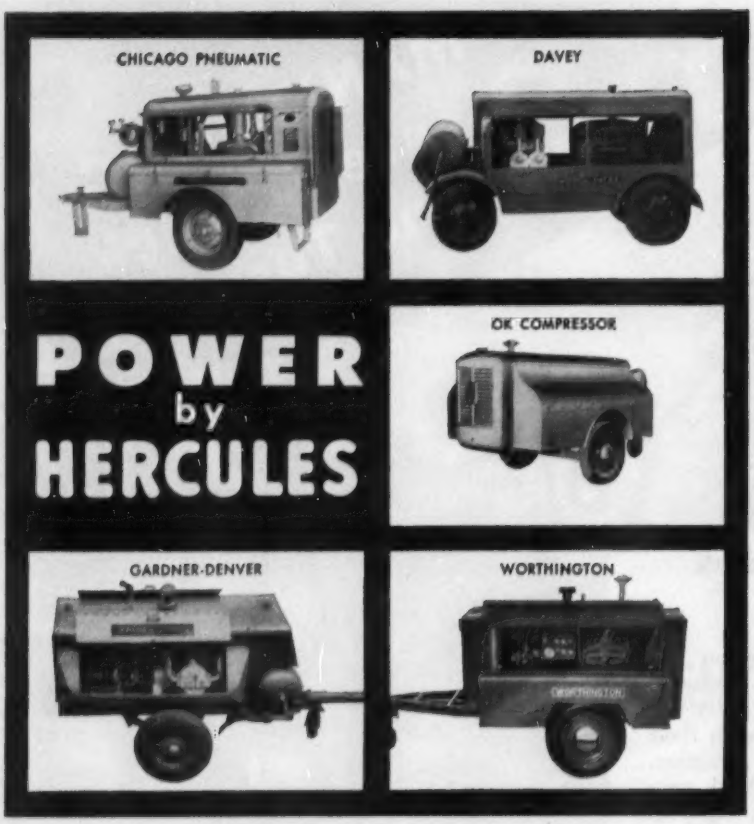
• **POSITIVE STABILITY** assures full capacity buckets with any length boom. You get more heaped loads from one position, cutting down on the number of machine moves. Long, wide crawlers with low ground pressure let you work in soft, hard-to-reach spots and travel over soft ground without mats.

• **MORE POWER** through simple, clean design. There's less dead weight — less maintenance . . . more power for top performance every shift. Fewer parts provide more effective utilization of power. Fuel consumption is lowered for most economical operation possible with a machine of this size. Single diesel power plant eliminates need for several electric motors and thousands of electric wires and connections . . . greater mobility without dangerous, awkward cables dragging from machine.

• **FAST CONVERTIBILITY** to shovel and crane operation makes the 4500 a versatile unit for any type of construction job. Big capacity, 5½-yd. shovel is engineered for your roughest jobs. 100 ton crane is ideal for heavy construction work. Manitowoc Engineering Corp., Manitowoc, Wis.

Your MANITOWOC distributor has all the facts on the Powerful 4500 . . . contact him now!

MANITOWOC
SHOVELS 1-5½ YD. Speed crane CRANES 20-100 TON



You can see . . .

HERCULES ENGINES are popular... but let's talk performance.

Popularity isn't the only reason Hercules Engines power these well-known makes of air compressors. The main reason these companies select Hercules Engines is that they provide dependable power—engineered to the requirements of the compressor.

Air compressors, like other types of equipment, are designed by the manufacturer for specific capacities. They need an engine that will produce the rated power as well as a power plant to fit the operating features of the application.

Then too, owners appreciate the dependable service and "trouble-free" operation of Hercules Engines. They know that with routine maintenance, their Hercules powered equipment will give them years of "top-notch" performance.

With the addition of the recently announced G.O. Series (Gasoline Overhead Valve) and the D.D. Series (Direct Injection Diesel), Hercules customers have an even greater selection of internal combustion engines and power units. More than 90 different models are available from 3 to 500 H.P. for operation on natural gas, gasoline or diesel fuel.

Hercules Sales-engineers will be glad to assist you in solving your particular power problems. Drop us a letter, we'd be most happy to work with you—of course, there's no obligation.

All Types of Dependable Power

Gasoline Diesel

HERCULES MOTORS CORPORATION, Canton, Ohio

HYDRAULIC DREDGE . . .

Continued

hauled from the borrow area.

Estimating the job on that basis, Fisher bid $1.00 per cu yd for sand-drain material—and he got the contract. His closest competitor bid $1.60, and other contractors were even higher.

8,000 Yd a Day

Bulk of the work now is completed, and the method is paying big dividends. Working around the clock, the dredge places an average of 8,000 yd a day. Discharge lines average 2,000 ft long; the maximum is 5,000 ft.

Whenever the dredge gets ahead of the scrapers, it moves itself a few hundred feet downstream and works on part of the 60,000 yd of muck excavation at a bridge location. The muck is discharged into depleted pockets of the borrow area. In this way, the dredge keeps busy at all times. And the borrow pit offers the additional advantage of serving as a disposal area.

The dredge pumps four kinds of material in the one area—152,000 yd of sand-drain blanket, 54,000 yd of sand-drain material, 60,000 yd of muck excavation, and 68,000 yd of sandy backfill around the bridge. Owned by Eastern Engineering Co., the dredge's main pump is powered by a General Motors 1,200-hp diesel engine. A twin engine serves as a standby. All other motors, pumps, and generators are powered by two smaller diesels.

When the dredge's work is complete, its superstructure will be dismantled so it can clear the many low bridges on its trip down Big Timber Creek to the Delaware River. The same procedure was required to bring it up the river.

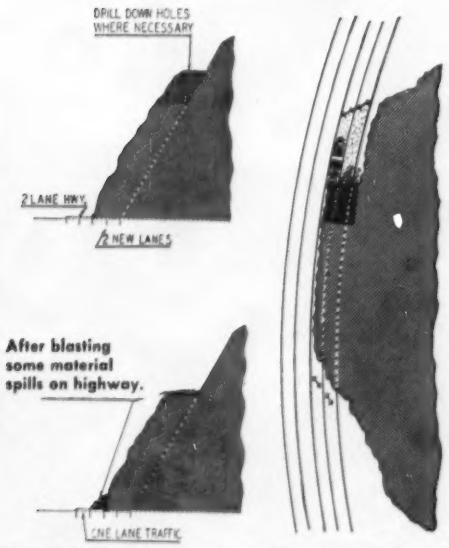
Personnel

Raymond Fisher is president, Joseph Boyd is project engineer, and John Frank is superintendent for Public Constructors. The job is directed by the New Jersey State Highway Department.

INSURANCE SERIES REPRINTS AVAILABLE

The contractor spends about 10% of his overhead on insurance. Edward G. Armitage, a construction insurance specialist, has written a concise, easily understood analysis of contractors' insurance problems. Single copies are 25¢. Address requests to the editor.

Highway Widening Jobs Need Not Obstruct Traffic



Contractors can take highway widening jobs without building bypass roads to carry traffic.

The busy highway shown above is being widened from two lanes to four lanes using the method described at left.

The problem was solved by keeping the trucks and excavating equipment off the highway so that it remained open for traffic except at intervals when shooting was necessary.

The Eimco 105 Tractor-Excavator was ideally suited to this type of job. It loads large trucks full from the end and cleans up the big boulders quickly. With the Eimco operating in a straight line, forward to dig and load and reverse, with the bucket moving overhead, to discharge.

Digging in dirt and consolidated material can often be accomplished without blasting the material at all. The Eimco 105 will load in dirt at the rate of 10 yards per minute and in rock the rate of loading is 6-7½ yards per minute depending on the material.

Eimcos are heavy-duty machines built to handle the toughest kind of jobs. They can apply more thrust force at the digging lip than larger equipment costing several times as much.

Write for complete information on Eimco 105 Tractors.

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(Advertisement)

Dart 140-TC truck with Allis-Chalmers 8DAS-1125 supercharged diesel being loaded by a shovel powered by an Allis-Chalmers 6DCS-1879 supercharged diesel.

Fifty-five ton Dart truck powered by Allis-Chalmers 8DAS-1125 supercharged diesel dumping over edge of spoil bank that is approximately 500 ft high.

DIESEL ENGINES AVERAGE 5,000 HOURS BEFORE OVERHAULS

Allis-Chalmers Buda Division truck engines powering 24 Dart and Euclid trucks help keep production flowing smoothly at the Bagdad Copper Corp. mine under extremely demanding conditions. These trucks work two shifts a day, six days a week, hauling out both overburden and ore. The haul covers about 7/10 mile, up a grade which starts at 12 percent and quickly increases to 18 percent, with five torturous switchback turns. Thick, abrasive dust adds still further to the grueling test.

Under these conditions the Allis-Chalmers engines have averaged over 5,000 hours of operation before their first overhaul. Many of them have given more than 20,000 hours of service since 1949, and are still "going strong."

Other Allis-Chalmers engines also take a hand in production even before the hauling stage. A large shovel powered by a Model 6DCS-1879 engine has loaded out more than seven million tons of ore since June, 1949. There are Allis-Chalmers engines on the drills, compressors and dozers.

Altogether, the performance of these big, tough engines has helped hold the over-all cost of moving ore and overburden to less than ten cents a ton. It will pay you to put productive performance like this under the hood of your trucks and other units. Write for complete details and the name of your nearest Buda Division dealer.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS A-C

BC-1

Trucks at the Bagdad Copper Corp. mine, Bagdad, Arizona, haul overburden and ore up grades as steep as 18 percent and around five torturous switchbacks — a real test for any hauling unit and its engine.

Visual Check By Operator Cuts Trouble

BATTERIES, cooling system, cables and sheaves, and other spots trouble is likely to occur should be checked visually by the operator before he starts his rig.

KEEPING HIS RIG in good condition is as much a part of the operator's job as it is the mechanic's. It doesn't take a master mechanic to discover that a fan belt is loose or that a cable is frayed.

Any maintenance program worthy of the name is based on uncovering trouble spots before they can develop into costly repair jobs. Spotting minor troubles goes a long way beyond maintaining proper lube schedules or 1,000-hr check-ups. Trouble, you can be sure, does not develop on schedule.

The operator is in the best position to judge the day-by-day condition of his machine. By taking the time to make a quick visual inspection of his rig before and after he operates it, he can play an important part in keeping his machine in top working order. Here are a few of the trouble spots the operator should check:

Cooling system · When cooling system hoses become spongy, particles of hose tend to break loose and enter the system. This can clog the entire system, so replace spongy hose. See that clamps and connections are properly tightened. Check water supply frequently.

Drive belts · Check for proper tension and for signs of wear or misalignment of drive belts on compressors, fans, and water pumps. When belts have stretched so that they cannot take up the slack of an adjustment, they should be replaced. See that fan belt blades are turning free, not hitting the radiator or other parts.

Electrical connections · Check insulation where cables rub against the machine or where they are subject to frequent flexing. Wrap them with tape when necessary. See that cable clamps are in place to prevent unnecessary movement.

Tubes and connections · Use the proper size wrench when tightening loose connections. Do not use pliers; they may damage the fittings. When tightening fittings be careful not to twist the tubing.

Batteries · Inspect batteries for proper water level. In cold weather, add water only before the machine is to operate. This assures a proper mixture of battery liquids so that the danger of freezing is eliminated. Check for signs of corrosion, swelling, or leakage and see that hold-down bolts and blocks are adjusted properly to prevent the battery from moving.

Cables and sheaves · Sheaves that are out of alignment will greatly increase cable wear. See that sheaves rotate freely and are not clogged with mud. Check cables for worn or frayed spots so that they can be replaced before they break in the field.

Tires · On rubber-tired equipment, check tires for cuts, bulges, or other indications of impending failure. If threads are not wearing evenly, the maintenance shop may have to realign wheels. Remove rocks or debris that may have wedged in the treads.

Steering controls and brakes · For his own protection, the operator should report excessive free play in the steering mechanism and any indication of brake trouble. It is important that the proper level of liquid be maintained in the oil reservoir of the hydraulic steering control. Keep dirt away from electrical motor brakes and other moving parts.

Engine compartment · Check the compartment and under the machine for signs of oil leaks. A leaking gasket may be the cause of excessive oil consumption. Also check the engine compartment for debris that may impair engine operation. If you find a nut or bolt under the machine or in the engine compartment, don't discard it, but try and find out where it belongs. It may be important.

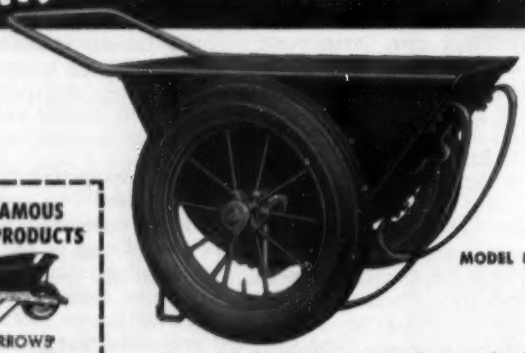
Torque converter · A torque converter is practically noiseless when functioning properly. Call the mechanic's attention to any unusual noise. See that the oil level in the converter is checked daily but be sure not to fill to more than the indicatel level.

(Continued on next page)

Steel sheet pile stubbornly set in hard rock in constructing the Bugge Island Dam across the Roanoke River in southern Virginia breaks loose under the blows of a McKiernan-Terry E4 Double-Acting Pile Extractor. McKIERNAN-TERRY CORPORATION, 110A Richards Ave., Dover, New Jersey.

CONCRETE CARTS by JACKSON TRADE MARK

Oldest and Largest Wheelbarrow Maker In America



MODEL 8-88

OTHER FAMOUS JACKSON PRODUCTS

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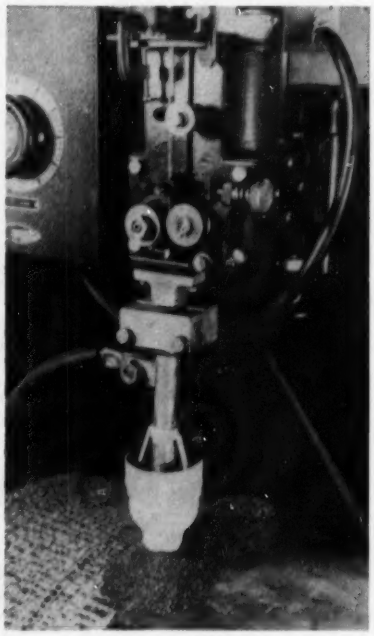
MORTAR PANS

Rugged Jackson concrete carts have perfect balance and rocker runners for controlled dumping. *Won't roll back on operator.* Equipped with drop axles. Steel or pneumatic tired wheels with roller bearings and zerk fittings. Available in many models with 6, 8, or 10½ cu. ft. heaped capacity.

ASK YOUR CONTRACTOR EQUIPMENT DISTRIBUTOR

Jackson Manufacturing Co. • Harrisburg, Pa.



Automatic Welding Head Hardfaces Small Rolls

AN AUTOMATIC submerged arc welding method of hardsurfacing that has saved time and money for a crusher roll manufacturer can easily be adapted by contractors to build up small rolls.

The Weston Welding Works of Rochelle Park, N.J., fabricates rolls for cinder crusher plants. But when the right hardsurfacing material is used, the technique can be applied to other types of small crusher rolls. Weston's rolls are 40 in. in dia, 20 in. wide, and have an original wall thickness of 1½ in. After the hardsurfacing has been completed, each roll weighs about 2,100 lb.

First, Weston clamps a roll to a Worthington welding positioner that turns the roll 24 in. per min. A Hobart 16DA automatic welding head, above, with a constant voltage power supply feeds Coast Metals 92A, 3/16-in. wire at the rate of 40 in. per min at 520 amp, 29 v.

Coast Metals 92A is an alloy steel electrode encased in a continuous steel wire. Two hundred inches of wire are deposited in one revolution. To meet Weston's specifications calling for a 5/16-in. thickness, two layers of 54 passes each are required. The total amount of wire used for both layers is 1,696 ft, weighing 165 lb.

There's only one GYRO-FLO

GYRO-FLO Compressors and I-R Wagon Drills on a throughway construction job. More compressors and drills on another section of same highway are shown below.

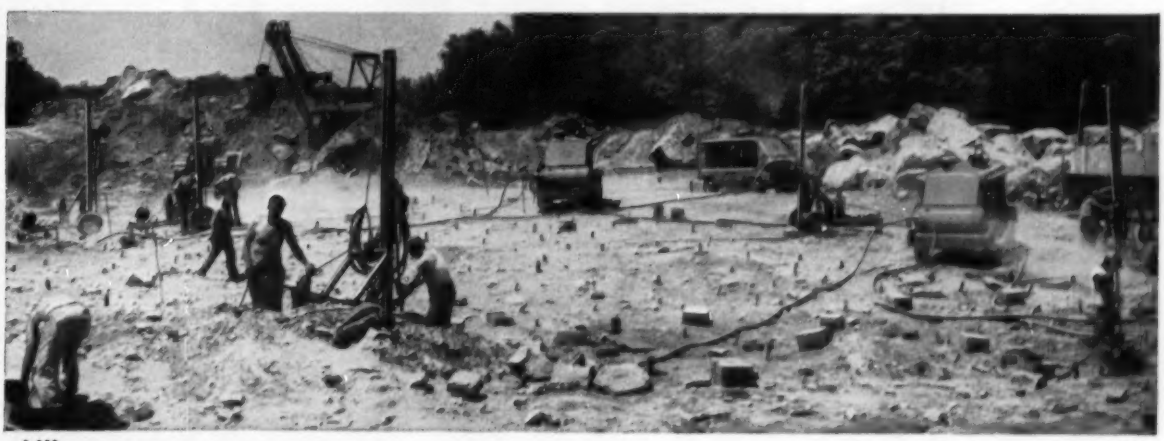
EVER SINCE 1950, when the sensational GYRO-FLO portable rotary compressor was first introduced, there has developed an ever-growing trend to rotary design.

Yet the GYRO-FLO still remains years ahead in advanced design and proved performance. On job after job, thousands of units in all four sizes have established an unmatched record for dependability, economy and remarkable freedom from maintenance.

In the past six years, still further features have been added so that when you purchase a GYRO-FLO portable compressor, you are getting today's most economical air-power.

There is only one GYRO-FLO—and Ingersoll-Rand has made it since 1950.

Ingersoll-Rand, 11 Broadway, New York 4, New York.



2-323

Ingersoll-Rand's Portable Rotary Compressor

Introduced in 1950

Available in 125, 210, 315 600 and 900 cfm sizes

AN UNBEATABLE COMBINATION–GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

Another

"The performance of this machine speaks for itself," says Sidney Steel, paving superintendent of the Austin Paving Co. "Our records tell us this machine has long since paid for itself and it still has years of work left in it."

RECORD OF PERFORMANCE

Austin Paving Company of Dallas, Texas put down 5,580 sq. yards of concrete in one day with single Flex-Plane Finisher!

Speed, power and flexibility, designed into the Flex-Plane, enabled it to easily keep pace with a dual drum paver while making two passes over the roadway, without benefit of a spreader.

WORLD'S LARGEST BUILDER OF CONCRETE FINISHING EQUIPMENT

9883

Paving Record for...

Flex-plane

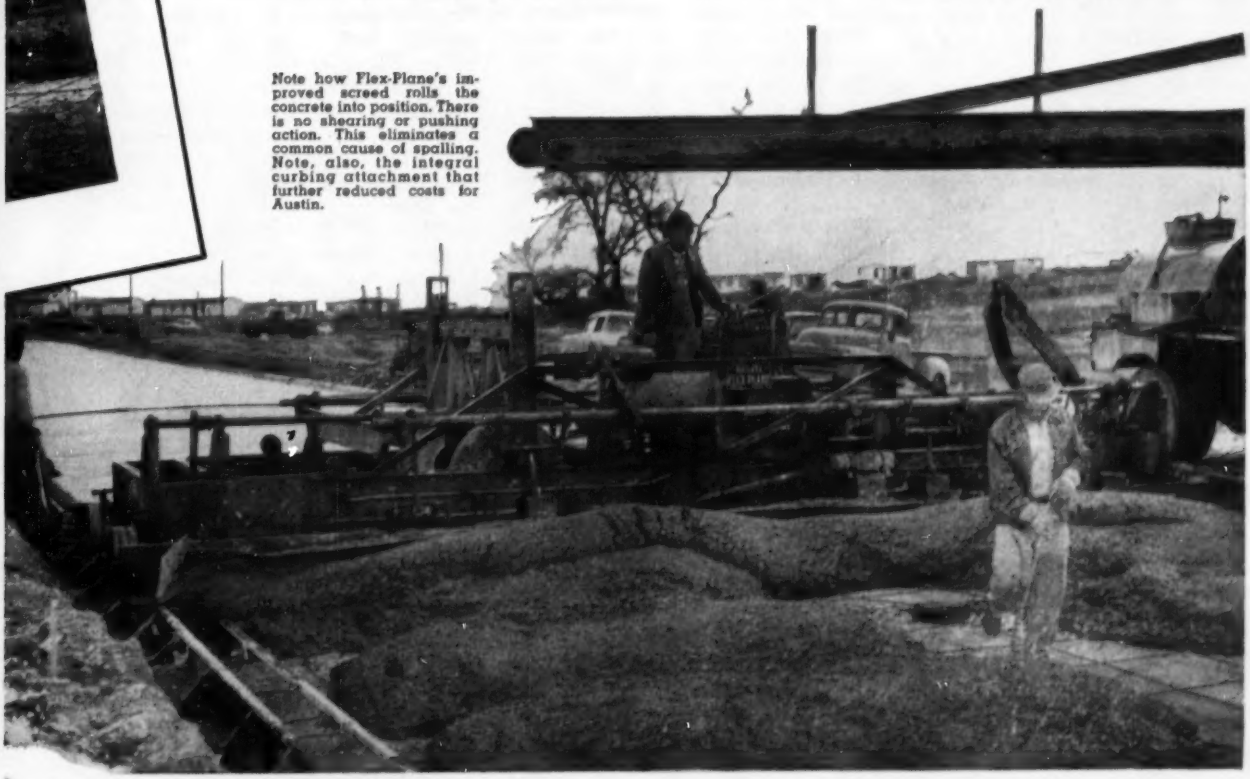
● A Flex-Plane Portable Finishing Machine recently spread and finished 1860 lineal feet of 27-foot width street, with 6" integral curbs on both sides, in a single day for the Austin Paving Company of Dallas, Texas.

"Taking the concrete as it came from a single dual-drum paver, the Flex-Plane machine spread and finished it to a degree that required a minimum of hand finishing. It's a great piece of equipment!" says Sidney Steel, Paving Superintendent for Austin.

The Austin machine was equipped with integral curb attachments on both sides, and according to Steel, this feature alone saved them many pouring hours.

It's this kind of performance that has made the Flex-Plane, the industry's fastest selling and most desired finishing machine. Why not let our sales-engineers put you in touch with a Flex-Plane user in your area. His story will convince you that, if you do any roadway or runway paving at all, you can't afford to be without a Flex-Plane.

THE FLEXIBLE ROAD JOINT MACHINE COMPANY
6800 THOMAS ROAD • WARREN, OHIO



Note how Flex-Plane's improved screed rolls the concrete into position. There is no shearing or pushing action. This eliminates a common cause of spalling. Note, also, the integral curbing attachment that further reduced costs for Austin.

Contractor-Labor Relations . . .

by LEON B. KROMER, Jr.

Bargain to Get a No-Strike Clause

This is the fourth in a CM&E series of articles on how to prepare in advance for your next collective bargaining session.

SUBSTANTIALLY ALL major provisions of collective bargaining agreements are really concessions by employers to unions and the men they represent. But unions make one concession that is of major importance to contractors—the no-strike clause. This is the most significant concession that unions can make because it restricts their right to use their major economic weapon against an employer.

The no-strike clause usually is tied in with a no-lockout commitment by employers. But as a practical matter, the use of the lockout is extremely rare.

There are two types of no-strike clauses: one binds the union unconditionally not to strike under any circumstances, the other conditions or limits the no-strike no strike commitment The first is, of course, the more desirable. Here are three examples: "There shall be no strikes, slowdowns or stoppages of work. In the event that a dispute arises, or a claim of a violation, or a disagreement as to the intent or terms of this agreement, the men are to continue to work. Any and all disputes shall be referred to the Board of Arbitration as provided in Article—of this Agreement."

"All disputes that may arise, whether or not they arise under the terms and conditions of this agreement, are to be settled by arbitration. Pending settlement by arbitration as set forth in Article —herein, there is to be no stoppage of work by the men or lockout by the employer."

"It is hereby mutually agreed that there shall be no strike or stoppage of work by any member of the union, and there shall be no lockout of any sort by the employer."

In each of the above clauses the union commits itself and its members not to strike under any circumstances. Will unions agree to such unconditional clauses? The answer is "Yes". Each of the above examples is taken from a current agreement between building trades unions and contractors. Unions will continue to agree to such clauses so long as a workable arbitration clause is included as part of the agreement.

Many agreements do contain the conditioned or limited no-strike clause. This is one example:

"Any and all disputes that may arise, except those that violate the work jurisdiction of this union as set forth in Article —, shall be referred to the Arbitration Board in the manner prescribed in Article —, and there shall be no stoppage of work during such arbitration."

Here the union is committed not to strike over any disputes except those that arise over work assignments. These are not subject to arbitration, and, when they come up, the union can pull men off a job. Contractors should not agree to such a limitation because it takes from the arbitration procedure the most common type of dispute that does arise. In addition, it violates the Taft-Hartley Act and the agreement between the international unions and contractors setting up the National Joint Board for the settlement of jurisdictional disputes.

Here's another example:

"Any and all questions relating to the violation of this agreement shall be settled by the attached Arbitration Agreement. Pending such arbitration, there shall be no strikes or lockouts. However, it is mutually agreed that the agreed hours of work and the agreed wage scale shall not be a matter of arbitration during the life of this agreement."

If a contractor working under the agreement that includes the above clause was accused of violating the wages or hours provisions of the agreement, apparently the union could strike his job. Two important provisions of the agreement are excluded even though they often lead to disputes.

Here is an example of a no-strike clause that permits the union to strike should non-union conditions exist on the job:

"Should any dispute arise between the employer and an employee or between the employer and the union concerning the application or interpretation of any provision of this Agreement or concerning any term or condition of employment, such dispute shall be settled by arbitration as hereinafter set forth. Pending a settlement the men shall remain at work. However, the union shall have the right to refuse to permit its members to work on projects where non-union men are employed."

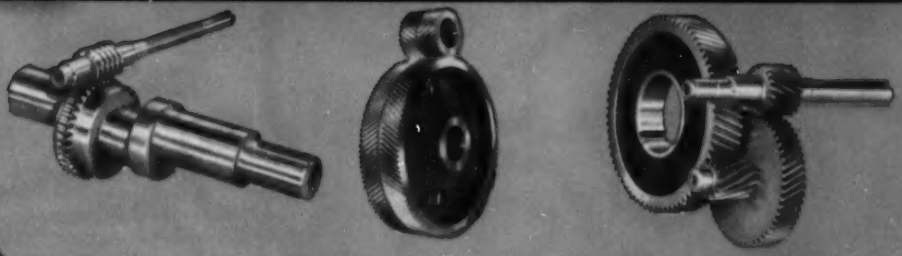
Without getting into the legality of that last sentence, it is important not to include such a condition in the agreement. Many jobs have separate prime contracts for mechanical work, grading, etc., and general contractors, as well as subcontractors have nothing to say about the union status of other prime contractors' employees. So they are exposed to strikes over a condition which they cannot control. Without the last sentence the above is a good example of an unconditional no-strike clause.

Review the no-strike clause of your current agreement. If it contains conditions permitting strikes without arbitration, try to have them eliminated. In addition to setting forth standard wages, hours, and other conditions of employment, collective agreements should stabilize labor relations, prevent lost time by employees, and avoid slow job progress by contractors. Agreements that leave the door open for strikes fail to fulfill one of their basic purposes. A strong argument in favor of an unconditional no-strike clause is a simple but workable arbitration clause.

The Arbitration Clause

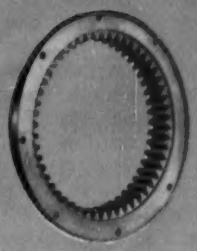
These usually are included in the same article of the agreement as the no-strike clause. They provide a means for peacefully settling disputes without resorting to economic pressure through a strike or lockout. Arbitration means that disputes that cannot be settled on the job by the business agent and employer (or representative of the employer's association) will be referred to an impartial umpire whose decision shall be binding on both parties to the dispute.

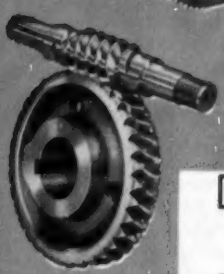
These clauses frequently provide



ILLINOIS GEARS

America's most complete line of Gears-





From the modern plants of *Illinois Gear* come the most complete line of gears in America.

Whatever the requirement . . . spur, bevel, helical, herringbone, worm and worm gears, spiral bevel gears, etc. . . . look to Illinois Gear to fill your needs.

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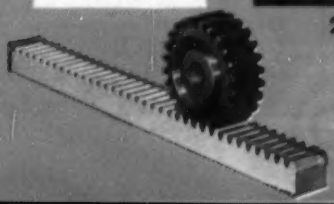
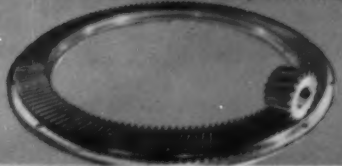




for several steps before the dispute is submitted to an arbitrator. An important feature of arbitration clauses is the manner by which an arbitrator is selected. The most common specifies that an arbitrator must be satisfactory to both sides. Many clauses stop here. But what if the parties cannot agree upon a mutually satisfactory arbitrator? Such a contingency should be provided for, but often it is either overlooked or ignored.

Clauses that do take the next step often stipulate that a disinterested third party or organization shall select the arbitrator. A number of clauses provide that he shall be chosen by the American Arbitration Association or by federal or state mediation services. Others specify a prominent public figure in the community.

One such clause that has withstood the test of time and use is the one contained in the agreement between the Building Contractors and Masons Builders Association of New York and the Executive Committee of the New York bricklayers unions. It provides that if the Joint Committee (representing the association and unions) is unable to agree, the dispute is referred to an umpire selected by the Committee. If, however, the committee is unable to agree on an arbitrator, either party may, after notice to the other, request the President of Fordham University to appoint such an umpire. The decision of the umpire is final and binding on both parties. Another agreement provides that the arbitrator shall be selected by the presiding judge of the State Supreme Court, if the Joint Committee cannot agree.

There are many ways to write an arbitration clause, but make sure that it covers all steps to be taken to resolve a dispute. These can be summarized as:

1. Settlement at the job (job steward and superintendent).
2. Settlement between business agent and employer.
3. Settlement by a committee representing both the union and the employers. (The number to represent each side should be limited to two or three).
4. Settlement by an arbitrator selected by this joint committee.
5. If committee cannot agree on arbitrator, he is to be selected by an impartial third party.

Health, Welfare, Pension Funds

Many contractors feel trapped when confronted by demands for welfare or other funds by union negotiators. They don't like them because they don't want to serve as trustees (it takes a lot of time, particularly in the initial stages) and because of the extra bookkeeping involved. However, by this time many contractors and associations of contractors have come face to face with demands for some type of fund for the benefit of union members based upon employers contributions.

Some negotiating committees have agreed to the establishment of such funds; others have "stalled off' setting up any kind of fund. Often, those committees that have agreed have obtained concessions from the unions. In one case a local was so set on having a welfare fund that it agreed to no wage increase for two years, provided the contractors established at the beginning of the first year a welfare

Moto-Paver is More Flexible—More Adaptable

say these County Road Engineers

Truck dumping aggregate into forward hopper of Moto-Paver. Aggregate can also be picked up from windrow, using an H & B Loader.

Leaving an even layer of mixture behind, a Moto-Paver moves along a county road. Paving speeds are infinitely variable from a minimum of 2 ft. per minute. Road speeds up to 25 mph.

In all parts of the country—on all kinds of roads and all types of terrain—Moto-Paver is daily proving its flexibility and adaptability in maintaining and resurfacing roads and streets.

Harry D. Martin, road engineer of Cowlitz County, Wash., says: "The biggest advantage of the Moto-Paver is its flexibility. We can raise or lower a crown, and raise or lower either shoulder."

L. S. Matthews, engineer of Pacific County, Wash., says: "We have found the Moto-Paver more adaptable in placing road mix mats over the conventional method of blade mixing. We also get a more uniform percentage of bituminous cement in the mat, plus a higher grade of asphalt."

Moto-Paver does the complete mixing and laying job—in one continuous operation. Mixing capacity on resurfacing work is 100 to 120 tons per hour. On stabilization jobs, greater capacities can be obtained. The machine can be moved quickly from one job to another—under its own power.

Ask your H & B distributor or write direct for new bulletin MP-55.

Hetherington & Berner Inc.

735 Kentucky Ave., Indianapolis 7, Indiana

"Sonny" Caravello (right), Greco Supervising Foreman, and Standard automotive lubrication specialist, Tom Farrell, go over Greco lube requirements. Tom Farrell has an engineering degree and has completed the Standard Oil Sales Engineering School. He has been providing lubrication technical service to Standard Oil customers for six years. Customers find Tom's experience and training pay off for them.

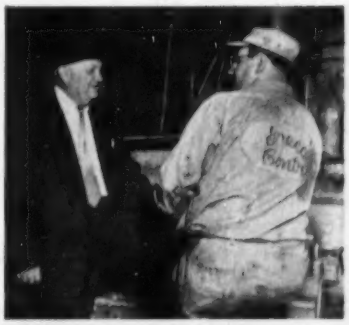
Greco Contractors, Inc. "moves the earth"

STANOLUBE S-1 Motor Oil helps keep Greco's equipment on the move

A lot of dirt in greater Chicago has been pushed around and hauled out of the way by Greco Contractors, Inc. One of the big projects on which Greco is now making the dirt fly is Chicago's Congress Street Superhighway. Greco dirt hauling trucks and dozers and shovels use STANOLUBE S-1 Motor Oil. There are good reasons why.

Moving dirt is a dirty job. Greco has neither time nor opportunity to baby equipment. Greco has a first rate maintenance system in operation and top servicing facilities but to meet schedules, dozers, shovels and trucks have to work hard and at top speed. This places a heavy burden on the motor oil. A motor oil that can't stand up to this kind of service breaks down. Heavy deposits build up on pistons and rings and the rings stick. STANOLUBE S-1 Motor Oil is specifically manufactured to eliminate the adverse deposits resulting from severe service conditions such as are imposed on Greco's equipment.

The job STANOLUBE S-1 is doing for Greco Contractors, Inc. by helping keep equipment moving earth, can also be done for you. Find out. Check with your Standard Oil automotive lubrication specialist in any of the 15 Midwest and Rocky Mountain states. Or write, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



Jim Phelps, Standard Oil automotive lube specialist joins Tom Farrell in assisting Greco men with lube problems. Jim has 29 years experience with Standard—aviation as well as automotive. Here Jim discusses maintenance with Greco equipment foreman Tony Guerino.

Mack and White trucks, both gasoline and diesel, comprise the largest portion of Greco's dirt hauling fleet. Sonny Caravello (left) and Standard's Tom Farrell here talk over lube matters beside A-55 Mack Diesel.

Quick Facts About STANOLUBE S-1 Motor Oil

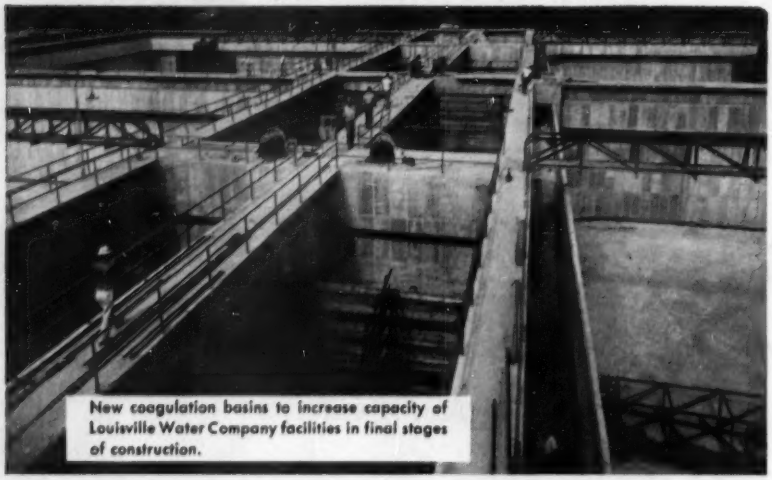
1. Special heavy duty oil developed to meet unusually severe engine operating conditions.
2. Provides effective lubrication for automotive diesel engines even when using high sulfur fuels.
3. Manufactured from high quality "center cut" base stock.
4. Detergent-dispersant additives control deposits on pistons and rings.
5. Oxidation and bearing corrosion inhibitor additives prevent formation of excessive varnish and sludge; prevent corrosion of bearing metals.

STANDARD OIL COMPANY
(Indiana)

STANDARD

(Advertisement)

How Pre-Fab Forms Saved Time, Material On Water Plant Job



New coagulation basins to increase capacity of Louisville Water Company facilities in final stages of construction.

Contractor Forms 200,000 sq. ft. contact area with 14,000 sq. ft. of panels

Forming a 350' square water basin with exterior and interior walls 31' high presents no problem to the experienced contractor. But, when the job must be done in minimum time at lowest possible cost to meet tough pouring and finishing specifications, careful planning and operation are required.

When the Henry G. Bickel Company and the Charles A. Connel Company were awarded the contract for the massive Louisville Water Company coagulation basins at Louisville, Kentucky, they selected the Uni-Form Panel System to form the 200,000 sq. ft. of contact area the job required.

Forming started fast, because the Uni-Form Panel System is ready to use when it reaches the job. Valuable time, labor and material savings were made because Uni-Form Panels require minimum alignment and bracing on 1 side only. The Uni-Forms were assembled and locked into a tight, rigid form with Uni-Form Ties supplied in exact lengths to provide automatically accurate thickness of both battered and straight walls.

One side of the form was erected, permitting easy, unhampered placement of reinforcing. Since specifications did not permit the use of chutes or tremies, pouring pockets were provided as the forms were closed to maintain positive control of concrete placement.

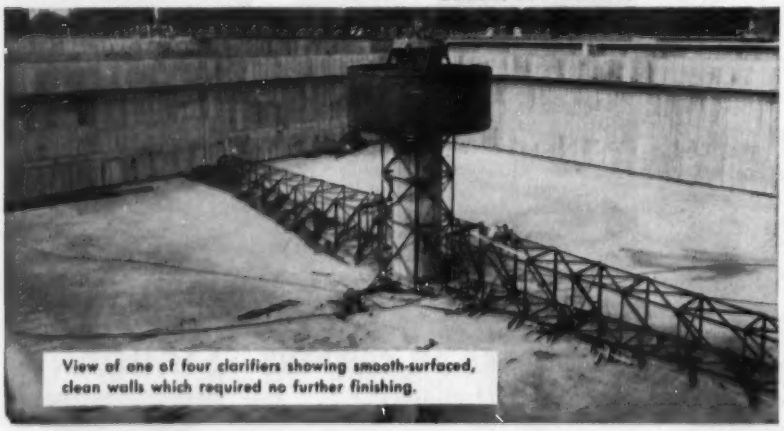
Fast erection and stripping features of the Uni-Form System enabled the contractor to form the entire 200,000 sq. ft. of contact area with only 14,000 sq. ft. of Uni-Form Panels. Panels were used an average of 14 times without the necessity of maintenance or repair.

The simplicity of the Uni-Form Panel System, together with the services provided by Universal Form Clamp Co., insured fast job progress and satisfactory completion under the capable supervision of Harry Hunter, Supt.

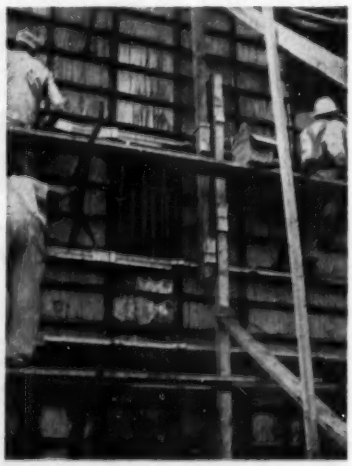
Uni-Form Panels are versatile, high speed forming tools. They're used by the country's most successful contractors to form every conceivable type of construction. They are rented or sold. Universal Distributors and Branches are located from coast to coast. Write for Uni-Form Catalog and complete details on Uni-Forming—the modern way to form concrete.

UNIVERSAL FORM CLAMP CO.
1238 N. Kostner Avenue • Chicago 51, Illinois
Branch Offices and Warehouses:
Los Angeles • San Leandro, Calif. • Houston, Texas
Cleveland, Ohio • Baltimore, Md. • Atlanta, Ga.

Section of exterior battered wall 31' high, showing Uni-Forming nearly complete. Uni-Form Scaffold Brackets replaced costly conventional scaffolding systems.



View of one of four clarifiers showing smooth-surfaced, clean walls which required no further finishing.



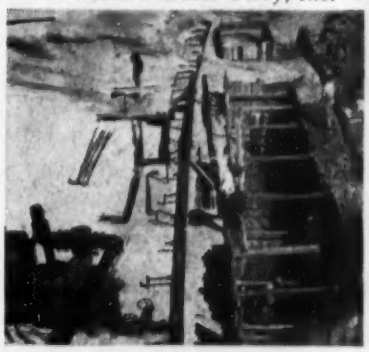
Pouring pockets permitted specified control of concrete placement.

HOW TO HANDLE WET JOBS

NEW SEA LIFE HOME FOR MARINE STUDIOS

Marineland, Fla.

Contractor: Arthur Perry, Inc.



50 POINTS, 240-ft header: What volume could be handled by a well-point system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.

3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume —it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

LABOR . . . Continued from page 212

fund based on employer contributions of 7½¢ per hour. The contractors agreed to the proposal and obtained other changes in the contract terms. In another instance contractors granted a higher wage increase than granted in previous years to avoid a welfare fund.

All types of funds paid for in whole or part by employers are becoming more common each year. The New York State Department of Labor published in December, 1955, a study of all types of funds for the benefit of employees financed in whole or part by employers. The investigation included the 4,435,000 workers covered under the state's unemployment compensation insurance. It was found that about 73% of these employees are covered by some type of health and welfare plans. Of the total number of workers included in the study, 226,400 were construction laborers and mechanics.

Of that number, 53% were covered by benefit plans. Yet it was found that employers financed the full cost in about 90% of the cases in the construction industry but only 59% of the cases for all industries. In addition, welfare and other plans are more common in the construction industry in highly industrialized areas.

Continuing emphasis will be directed by unions towards getting welfare, pension, vacation, or some other plan for members. If you are confronted with demands for one of these, talk to someone who knows about them—actuarial and insurance experts. Find out what's involved, what sort of plan can be developed based upon the "guestimate" of the number of men in the union, their average age, etc. One committee did just that and found out that, with the relatively small number of men in the union, no feasible plan could be worked out without a contribution of over 10¢ an hour. The contractors weren't even thinking in those terms (their top offer was 7½¢ per hour) so the plan was dropped during negotiations.

Assuming that your committee agrees to a welfare or pension fund, the first step is to insist that the union join in obtaining the services of an expert to guide both parties through the miasma of setting up a Board of Trustees, writing the trust agreement, establishing a workable plan etc.

no tire too big for VACU-LUG

Here's the Money-Saving Vacu-Lug Process . . .

ready to serve you, to slash maintenance costs. Your off-the-road tires for graders, loggers, trucks and other heavy machinery can get new tire traction and wear. You can have these tires relugged by the Vacu-Lug Process in days, and all this for less than half the cost of new tires. Breaks and cuts can be repaired like new. What's more, these relugged tires are guaranteed!

Many construction companies and contractors have been using tires relugged by Vacu-Lug for years. Many of the tires have been relugged again and again. Major rubber companies and gov't. agencies have approved the Vacu-Lug Process as an outstanding method for restoring new tire performance and wear.

Write today for the Vacu-Lug Shop nearest you. Your Vacu-Lug Shop offers complete tire service

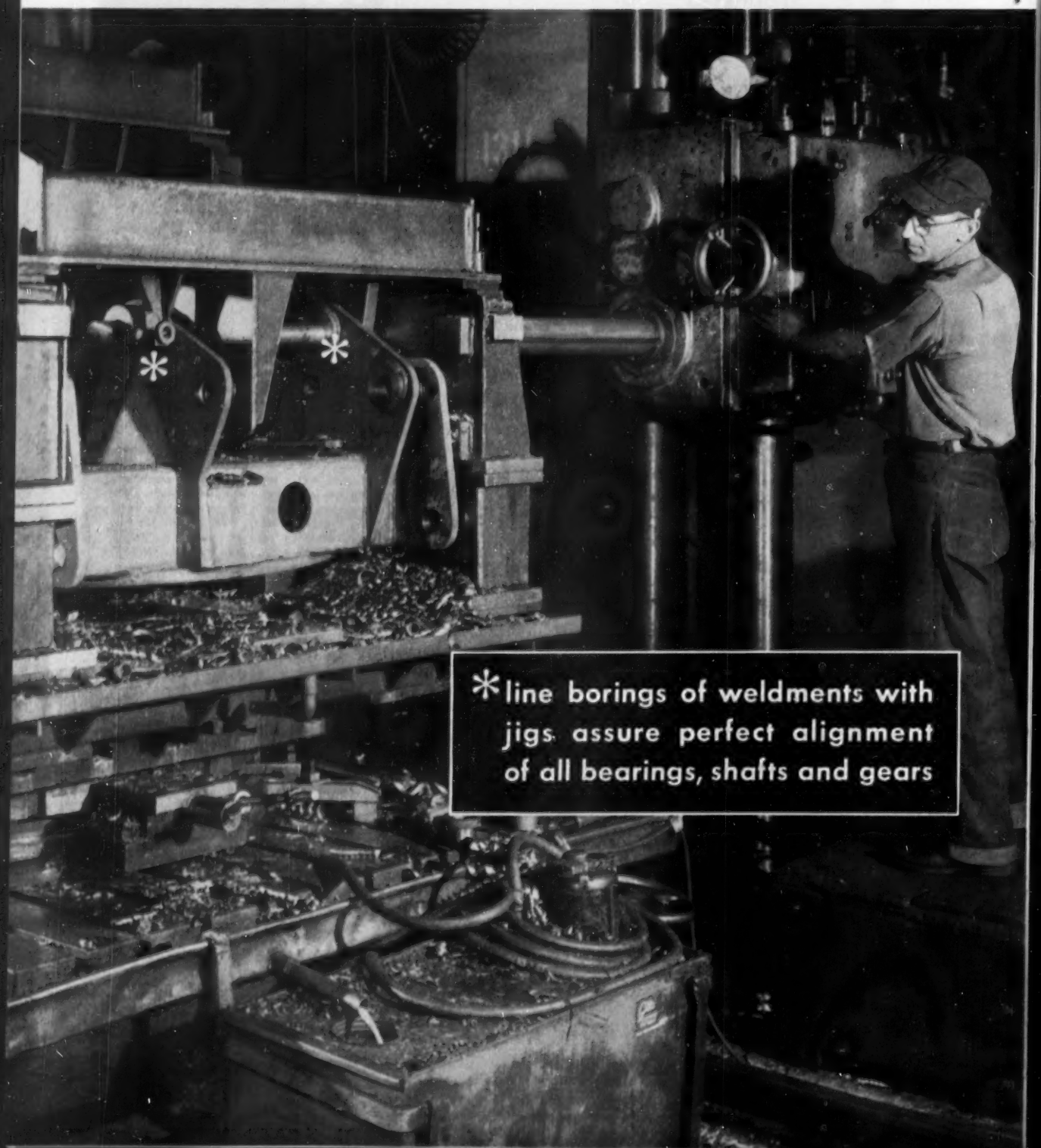
AMERICAN TIRE MACHINERY, INC.
MUNCIE, INDIANA

Name_____

Address_____

City_____

How does line boring add more guts to P&H



*line borings of weldments with jigs assure perfect alignment of all bearings, shafts and gears

power cranes & shovels ?

*It puts power to work; eliminates wasteful friction

Why waste power in friction? P&H design puts power to work for you at the hook or dipper. That's another way we put more guts in P&H power cranes and shovels.

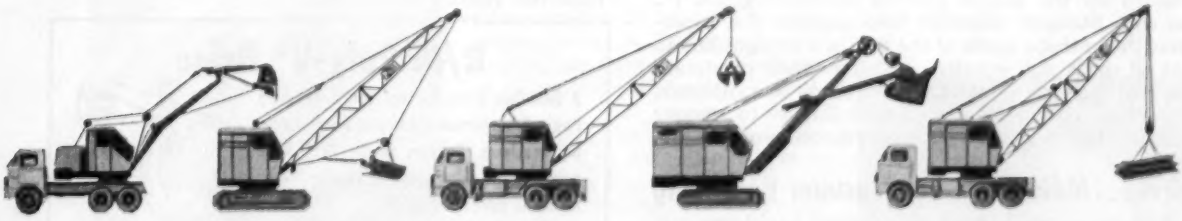
To eliminate waste friction, bearings must be in perfect alignment. That calls for precision manufacture. So P&H starts with powerful, rigid weldments. Then, line-bores them, using fixtures and jigs.

P&H bearings, shafts and gears just have to be in perfect alignment with this method. That's why P&H proudly says we put power to work; eliminate wasteful friction.

What's more, shafts, bearings and gears stay in alignment for keeps . . . with the roughest terrain, digging or lifting. P&H all-welded carbodies don't twist and bind.

Is it any wonder you get more value with P&H? All-welded to put more guts in every ounce of steel. Line-bored to eliminate wasteful friction; put the power to useful work.

No matter what your shovel or crane requirements, you'll get more for your money with P&H. See your nearest dealer for more reasons why. Harnischfeger Corporation, Milwaukee 46, Wis.



For Modern Engineering, Look to

HARNISCHFEGER

Power Crane & Shovel Division

the P&H line

HOW CONDOR V-BELTS
give you "More Use per Dollar"
Straight Sidewalls, More Grip, Longer Life
Structurally Balanced for Smooth Running

These Smoother Running V-Belts Lower Your Operating Costs

Condor V-Belt engineering makes the difference. The strength member is micro-positioned in heat dissipating rubber for a smoother running, cooler running drive . . . for longer life with the heaviest power loads. Condor V-Belt sidewalls are made *straight* to put positive pressure on the sheave grooves for more grip . . . less slip. Straight sidewalls help support the super-strength synthetic cords of the belt in a straight line so that *all* cords pull equally . . . deliver their maximum share of power. Controlled length is accomplished through prestretching during manufacture to remove inelastic stretch that might otherwise occur on the job.

NOW . . . Moisture-Proof Vacuum Packaging

R/M's exclusive new vacuum sealed moisture-proof packaging assures positive V-belt length control for users of longer lengths in C, D & E cross sections! Belts are measured at the factory under controlled humidity and identified for precise matching. They are then vacuum-sealed in moisture-proof aluminum lined bags. The result—no shrinkage or elongation in storage . . . sustained uniformity on the drive! Length is certified from the factory to the field.

R/M Poly-V* Drive

A New Belt Drive Concept For Heavy-Duty Power Transmission. Eliminates V-belt matching problems. Delivers up to 50% more power in the same space as regular V-belts or equal power in less space.

Write for copy of Poly-V Drive Bulletin #6638.

(*Poly-V is a registered Raybestos-Manhattan trademark)

RM-606 O

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings • Asbestos Textiles • Packings • Engineered Plastic and Sintered Metal Products • Laundry Pads and Covers • Bowling Balls

Construction Men in the News . . .

Williams-McWilliams Names 3 Top Execs

THE NEWLY ORGANIZED Williams-McWilliams Industries, Inc. has announced the appointments of three new top executives. Appointments were the result of the recent merger between McWilliams Dredging Co. and W. Horace Williams Co., engineering and construction firms both of New Orleans, La. New officers are **ALFRED A. STRELSIN,** (left) former chairman of the board of McWilliams, who was named president and chairman of the board for the new firm; **ROBERT E. GOSA,** (center) former president of the Williams Co., named executive vice president in charge of the W. Horace Williams division; and **LESLIE R. THORNTON,** (right) former president of McWilliams Co., who was made vice president in charge of the McWilliams division.

Strelsin also is president of Cenco Corp., the General Scientific Corp. and chairman of the board of the Heller Corp.

Gosa, who has been president of the Williams Co. for five years, has been connected with the design, engineering, and construction industry since 1920.

He is a member and past director of the Louisiana Engineering Society and the Engineers Club. He has been an associate member of the American Society of Civil Engineers since 1927.

Thornton was president of McWilliams Co. for one and a half years. He has been in the operating phase of the dredging business for the past 31 years.

J. A. DICKINSON, former president of Raymond Concrete Pile Co., Ltd., and Raymond Concrete International, Ltd., is a new executive of Merritt-Chapman & Scott Corp.'s construction department. He will serve as assistant to Myles C. McGough, vice president in charge of the industrial and building construction division.

Dickinson first joined M-C&S in 1935 as a cost engineer and chief estimator and later became a project manager and chief estimator in the company's construction department. He joined Raymond Concrete Pile Co. in 1952 as chief estimator on a French air base project, and later became president of Raymond's Canadian subsidiaries.

Dickinson saw service in France with the U.S. Army Engineers in World Wars I and II. A native of St. Louis, Mo., he was graduated from Cornell University in 1915 and is a member of the Society of American Military Engineers and the American Association of Engineers.

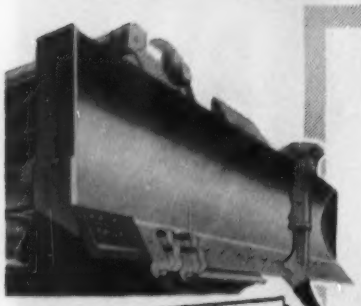
AMBROSE C. MARTINSEN has been named chief project manager for the engineering division of Catalytic Construction Co. Martinsen was Catalytic's resident engineer at Oak Ridge, Tenn., for the past two years. Martinsen is a native of Wisconsin and holds an engineering degree from Marquette University. He has been with Catalytic for four years and was formerly with the chemical plans division of the Blaw-Knox Co., Pittsburgh, Pa.

THOMAS W. BURTT is a new vice president in charge of engineering and construction for Holmes & Narver, Inc., Los Angeles.

(Continued on next page)

WHEN THE GOING IS TOUGH

CALL YOUR HENSLEY DEALER



HENSLEY

You'll find the going lots easier when Hensley lightweight, heavy-duty Rippers and special analysis steel Cutting Edges do the job for you . . . in dirt, rock, perma-frost, shale or hard-packed snow.

Hensley parts are precision made to fit all kinds of earth-moving equipment. Durability, dependability and greater job economy are built-in to every item in the Hensley line . . . whether it's dozer or scraper rippers, cutting edges, scarifier points, bottom track rollers or allied parts.

Some Dealer Territories Open

Get All the Facts Now!

Mail this coupon today! We'll send you full details on Hensley attachments.

Name_____

Firm Name_____

Address_____

City_____ State_____

HENSLEY EQUIPMENT COMPANY, INC. — MANUFACTURERS
800 PERALTA AVENUE · SAN LEANDRO, CALIF.

INDIAN

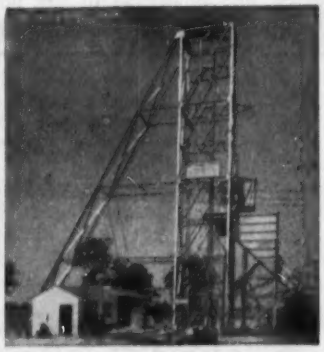
DRINKING WATER & SUPPLY TANK NO. 75G

Replaces unsanitary bucket and dipper. Portable. Push button faucet. Takes cold, clean water to workers right on the job. 5 gal. steel tank is curved to fit the back. Sturdy construction. Highly popular.

SMITH GARDEN KING
Low-priced power Sprayer
12 gallon capacity

For spraying silicon water repellents for masonry and cement work and many other spraying purposes. Briggs and Stratton Motor. Very high quality.

D. B. SMITH & COMPANY
Choice for Quality the World Over
450 Main St. Utica 2, New York



SAFE—DEPENDABLE
MAYO ALL-STEEL HEADFRAMES

Because conditions vary so greatly from one mine or tunnel job to another, a careful analysis of your operation should be made before attempting the design or construction of a headframe. Our twenty-five years of experience on important installations in America, Europe and South America is at your disposal.

Write for Bulletin No. 20 or send details.

Steel Forms • Headframes • Muck Bins Shields • Air Locks • Locomotives Mine Cars • Grouters

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PA.

CONSTRUCTION MEN . . .

Continued from page 219

He will direct all engineering and construction projects of the company, including industrial and petro-chemical assignments, domestic and foreign.

Mr. Burtt was associated with Standard Oil of California for 25 years, handling engineering and construction as Chief Engineer of Standard's El Segundo Refinery. In 1952 he joined Holmes & Narver, Inc., and shortly thereafter was appointed Director of Engineering. He was later elected to the Board of Directors.

COL. WENDELL P. TROWER is a new assistant to the vice president of Kaiser Engineers Division of Henry J. Kaiser Co. For the past five years Col. Trower served as division engineer for the Great Lakes and North Central Divisions, U.S. Army Corps of Engineers. Projects under his supervision included the design and execution of extensive military and air force construction programs in the Great Lakes area, studies for the redevelopment of power on the Niagara River, and the development of a plan of regulation of the levels of the Great Lakes. Construction of the St. Lawrence Seaway was also under his office's jurisdiction.

Previously Col. Trower was chief of the Chicago Engineer Procurement Office, U.S. Army, and district engineer for the U.S. Army Corps of Engineers, Chicago district.

Corps of Engineers

Eight new district engineer assignments have been announced by the U.S. Army Corps of Engineers. They are:

COL. JOHN D. BRISTOR, Tulsa, Okla.
COL. PETER C. HYZER, Detroit, Mich.
COL. EUGENE J. STANN, Nashville, Tenn.
COL. PIERRE V. KIEFFER, JR., Anchorage, Alaska
COL. HENRY C. ROWLAND, JR., Wilmington, N. C.
COL. ALBERT E. McCOLLOM, Sacramento, Calif.
COL. JOHN G. SCHERMERHORN, Tullahoma, Tenn.
and **COL. LYNN W. PINE, JR.**, Riverdale, N. Dak.

These officers will assume their new posts in July and August.

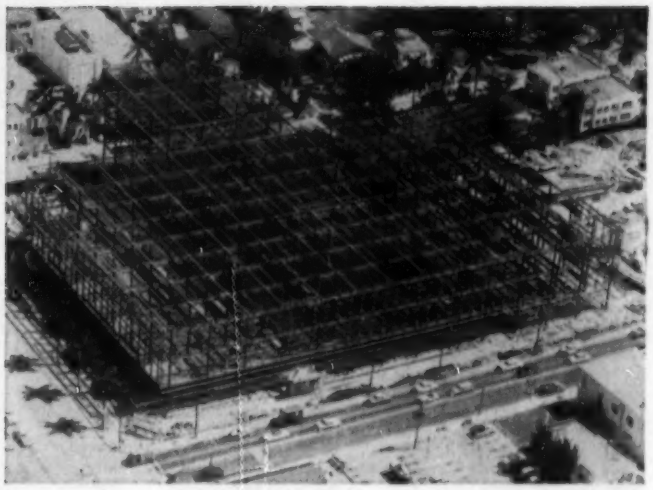
When a welded frame building has more useable space...

Has far simpler connections...

Yet uses less steel...

WHY

don't you design all buildings for welded construction



1200-ton all-welded framework for Jordan Marsh Department Store, Miami, Florida.

FIELD WELDING 1200-TON FRAME SIMPLIFIES AND SPEEDS ERECTION

of new Jordan Marsh Store

BY the use of fast, efficient field welding methods, substantial savings in material and cost have been realized on the new $5,000,000 Jordan Marsh Miami Store.

Beam-to-column connections were designed to permit fast, easy down-hand welding on essentially all joints. Connections for bottom flange of beams are shop welded to the column. In erection, beams are rested on these bottom flange connections. Top flange connections are field welded—butt welded to column flange and fillet welded to beam flange.

Fabricators and erectors: Lehigh Structural Steel, Allentown, Pa.; Structural Engineers: Jorgensen and Schreffler, Miami; Architects: Weed, Russell and Johnson, Miami.

Studies in Structural Arc Welding are available to architects and structural engineers. Write:

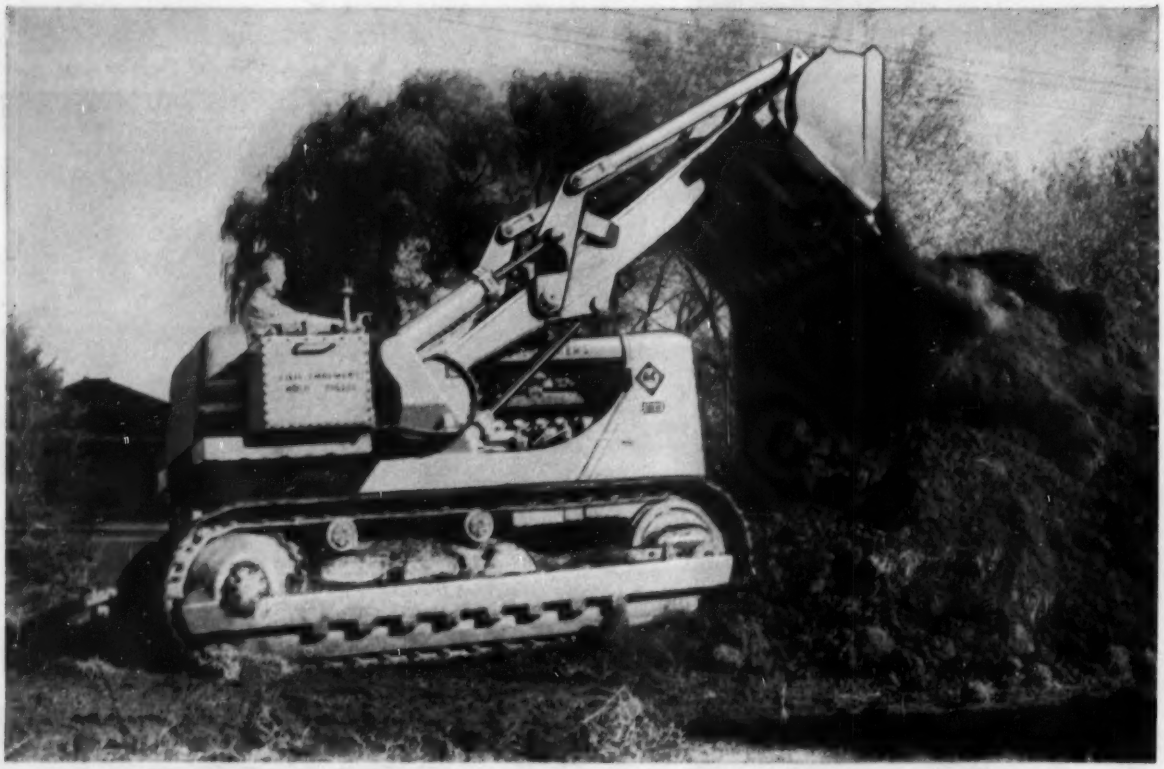
THE LINCOLN ELECTRIC COMPANY

The World's Largest Manufacturer of Arc Welding Equipment

Dept. 2708 • Cleveland 17, Ohio

Pioneer in Welded Structural Design . . . for Lower Cost

© 1956 The Lincoln Electric Company



"We dig between 175 and 200 basements a year, so I sure like this new 2¼-yd Allis-Chalmers HD-11G.

It handles just like a kitten"

George Pfeiffer, *Crystal Lake, Illinois*

Excavating basements, loading out trucks and landscaping work keep George Pfeiffer busy the year 'round. Like all contractors, big or small, he tries to make every hour count.

"I like everything about our 11G, including its over-all speed and reach. We can heap big truck loads fast and easy.

"When we bought this Allis-Chalmers HD-11G, we didn't figure on using it in close around homes, but we've found that it handles just like a kitten. It responds so quickly that we're using it just like our 1-yd Allis-Chalmers tractor shovel."

• • •

To get high production on fast-moving job assignments, at a profit, more and more contractors are choosing the new HD-11G. It's a truly modern tractor shovel, with all the advantages of Allis-Chalmers advanced basic design, including an all-steel box-A main frame; one-piece steering clutch and final drive assembly; 24-volt direct electric starting; unit construction; and 1,000-hour lubrication intervals for truck wheels, support rollers and final drives.

What's more, the HD-11G has what it takes for big, tough jobs — 105 net engine horsepower; 2¼-yd bucket capacity; 11-ft, 7-in. dumping height; 32,000 lb of balanced weight; almost 9 ft of track on the ground; 8 heavy-duty truck wheels per side; long-wearing ceramic master clutch lining; and a constant mesh transmission that eliminates double shifting.

All in all, the Allis-Chalmers HD-11G is tops as a tractor shovel. Let your Allis-Chalmers dealer prove it to you in a demonstration. It will be well worth your while.

ALLIS-CHALMERS
CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributors

Marion Power Shovel Co.: Three new distributors have been named by Marion to handle its line of crawler and rubber-mounted excavators. They are: Machinery Supplies Co., Inc., of Kansas City, Mo., who will cover Kansas and the western third of Missouri; State Equipment Co., Inc., Montpelier, Vt., who will cover the entire state of Vermont; and Knight Equipment Co., Richmond, Va., who will cover central and western Virginia. All the new distributors have extensive service facilities and parts inventories.

Bucyrus-Erie Co.: Oehler Tractor & Equipment Co., Inc., of Salina, Kan., now offers sales and parts service on Bucyrus-Erie excavators and cranes in the north-west part of Kansas. The new distributor will handle a line of ⅜ to 4-yd convertible excavators and cranes; 15- and 25-ton capacity Transit cranes, ⅜ and ½-yd truck-mounted Hydrocranes, and Bucyrus-Erie dragline buckets.

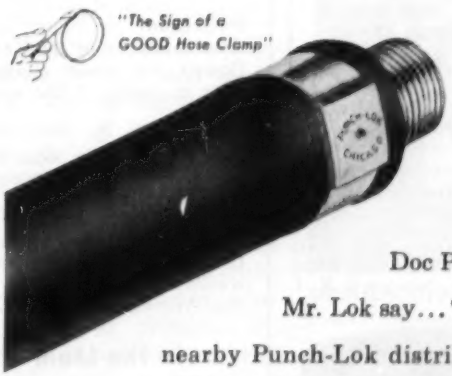
Clark Equipment Co.: Three new distributors have been appointed to handle the Michigan line of tractor shovels and excavator cranes, products of Clark's construction machinery division. They are Merts Equipment Co., Albany, Ga., who will cover 16 counties in south Georgia; Mainline Equipment Co., Inc., Des Moines, Iowa, who will sell and service the Michigan line in 17 Iowa counties; and R. A. Young & Son, Inc., Fort Smith, Ark., who will cover a large part of Arkansas.

Galion Allsteel Body Co.: Brown-Clark Equipment Co., Richmond, Va., will handle the full line of Galion dump bodies, hydraulic hoists and Load-elevator hydraulic end-loaders. The company will operate a complete service and parts department as well as a body and hoist mounting shop.

Simplex Forms System, Inc.: The following appointments have recently been made for sales and distribution of Simplex forms and accessories: American Bildrock Co., Chicago, Ill.; Prime-Best, Inc., Milwaukee, Wis.; NYCO Co., Denver, Colo.; Intermountain Concrete Spe-

Charm your hose

with PUNCH-LOK Hose Clamps



Doc Punch and Mr. Lok say... "See your nearby Punch-Lok distributor"— or write direct for product and price information.

PUNCH-LOK Company

5645

Dept. F, 321 North Justine Street, Chicago 7, Ill.

"THIS LUBRICANT KEPT 'EM ROLLING IN MUD, MUCK AND WATER"

—says J. O. ARCHIBALD
of Redwood City, California

The job was clearing 500 acres of salt marsh for crystallizing ponds. To quote, "We selected LUBRIPLATE No. 107 for track and general lubrication and LUBRIPLATE APG-140 for transmissions and final drives. During the entire job there was no replacements of track rollers nor any tie-ups of equipment due to parts replacement or breakage!"

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

LUBRIPLATE LUBRICATION

MAKES CARS AND TRUCKS RUN BETTER AND LAST LONGER

LUBRIPLATE H.D.S. MOTOR OIL . . . THE OIL THAT NEEDS NO ADDITIVES

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

SALES AND SERVICE . . .
Continued

cialties Co., Salt Lake City, Utah; Hamertons' Stone Centre, Ontario, Canada; Herbertson Sand and Gravel Co., Englewood, Colo.; Frank Kovacs, Bethlehem, Pa.; E. MacDougall and Assoc., Detroit, Mich.; Nelson Lumber Co., Caledonia, Minn.; Quality Concrete Construction Co., Gary, Ind.; and Reiman & Sons, East Aurora, N. Y.

On the Sales Front

Marion Power Shovel Co.: Two new divisional sales manager appointments have been recently announced, Lawrence E. Schaffer, a civil engineering graduate who was with the Ohio state highway department before joining the Marion organization, has been named sales manager of the central sales area. His office is located at Columbus, Ohio. George L. Moritz, has been made responsible for the sale of Marion products in Delaware, southern New Jersey, and eastern Pennsylvania. His office is located at Emmaus, Pa.

American Chain & Cable Co.: H. K. Hershey has been appointed New England representative for the Manley division of American Chain & Cable Co., Inc. Hershey, who will work out of the company's South Boston, Mass., office, has been associated with Manley since 1946.

Schramm, Inc.: Leslie B. Schramm, general sales manager, has announced the appointment of P. F. Smith as dealer sales manager in the southern and central divisions. Joseph E. McGrogan continues as regional sales manager in the area. John P. Powell has been named regional sales manager of the eastern territory.

Cummins Engine Co., Inc.: W. M. Steed, formerly a regional representative with offices in Chicago, has been named regional manager for the southwest region. His office is in Los Angeles. The Cummins southwestern region consists of California, Arizona, and Nevada.

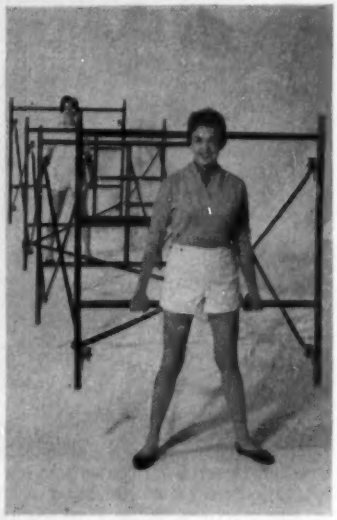
In the Main Office

Oliver Corp.: Edward H. Fisher, executive vice-president of A. B. Farquhar when it merged with Oliver in 1952, has been elected a vice-president of Oliver. Fisher is head of the industrial sales division.

Worthington Corp.: Elston J. Tribble, former assistant vice-president, and Aloysius M. Tullo, general manager of the Harrison division, have been elected vice-presidents of Worthington. Tribble has been with the company since 1929 and has been

(Advertisement)

NEW WACO Light-duty SCAFFOLDING holds up to 40 TIMES ITS WEIGHT



Here's scaffolding that's really rugged, and that takes excessive weight "in stride." One frame safely supports up to fifty pounds per square foot. Yet the scaffolding is so light that two men (or women) can quickly and easily move large sections.

Easy to move, WACO light-duty scaffolding puts a man close to his work at all times. And, with the exclusive WACO Speedlock, it's quick to assemble and disassemble. Only four parts to a section! Just lift the Speedlock . . . pull off the pivoted cross-braces . . . and, in a matter of minutes, WACO light-duty scaffolding is ready for moving or storage. And this amazingly sturdy scaffolding can easily be made up into rolling towers.

Made of high-carbon steel tubing, WACO light-duty scaffolding is available in frames 4' high by 4' wide. Casters, guard rails and other accessories are available.

Investigate the new WACO light-duty scaffolding today. You'll find it's light from a *cost*-standpoint, too.

For the name of your nearest WACO distributor, consult the yellow pages of your telephone directory, or write to:

WACO MANUFACTURING COMPANY
3560 Wooddale Avenue
Minneapolis 16, Minnesota

FIELD-TESTED DESIGN of new G-E 200-amp welder solves old and costly load drop-off problem in construction welding.

For hour after hour of sustained welding . . .

New G-E 200-amp Welder Delivers Steady Output Even at Full Load

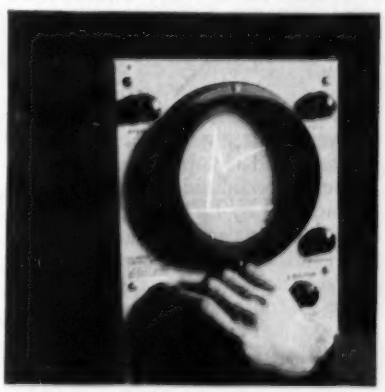
Now, with the new G-E 200-amp engine-drive welder you can be sure of reliable construction welding—even for sustained operation. This powerful new welder makes it unnecessary to buy more expensive, higher rated machines just to make sure you get full 200-amp output when you need it.

This field-tested welder gives you steady output and 100% arc stability—hour after hour—even when operating at full load. This is made possible by combining a generator specially designed for field use with a direct-connected Hercules engine.

In addition, the high recovery voltage of the welder gives you complete freedom from "popouts," no matter what type or size electrode you use or where you set the controls.

This rugged new G-E welder has already received the enthusiastic approval of pipeline and construction weldors, foremen, and superintendents. Test it yourself and take advantage of its many advanced design features . . . new engine slow-down control to save fuel and oil while not welding; heavy gauge metal construction (16-gauge canopy, ¼-inch crossbars) to withstand rough field conditions; non-projecting generator protected by full length canopy; and many others.

Contact your nearby G-E Welding Distributor (he's listed in the yellow pages of your phone book) or write for bulletin GEC-1333, Section 714-4, General Electric Co., Schenectady 5, New York.



OSCILLOSCOPE shows 200-amp welder delivers steady output, full heat at full load.

EXCLUSIVE ELECTRODE SELECTOR, CURRENT DIAL—Dual controls make current control easier and more accurate, eliminate guesswork in setting and resetting.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Forest Remover

A new machine . . . a new system . . . for economically converting wooded wasteland into productive earth

This is the LeTourneau TREE CRUSHER . . . a 110-ton steel monster whose heavy, cleated rollers crush big trees and thick undergrowth alike. It leaves a wake of splintered wood and compacted debris — ready for burning. Forest leveling by Tree Crusher is one of several new approaches to mechanized land clearing available in a line of specialized equipment manufactured by LeTourneau.

This new concept of land clearing . . . fast, efficient forest removal . . . is made possible by application of the LeTourneau system of electric power and control to massive land clearing machinery. The Tree Crusher and other LeTourneau specialized land clearing equipment generate their own power and transmit it directly to locally-placed, direct-geared electric motors at the wheels and other working parts. The result is more power, speed, and maneuverability than ever before available for land clearing operations.

Today these specialized LeTourneau machines are establishing new work records on big land clearing jobs: The huge *Tree Saw* which flush-cuts big trees; the *Tree Stinger* which pushes the biggest trees out by the roots; the *Tree Crasher* which uproots average size trees and stubborn stumps. The newest LeTourneau Land Clearing Machine is a *Powered Disc Plow* which slices through the earth, destroying root systems and stumps.

These are machines you'll want to consider for your big land clearing jobs. Send today for your copy of the booklet, "Roots Out or Cut Flush."

SINCE 1929 — R. G. LeTourneau, Inc., has built BIG equipment for 26 years under the same corporate structure. In 1953 LeTourneau sold part of its business, retaining plants in Longview, Texas, and Vicksburg, Miss. Today LeTourneau creates and produces electrically powered and controlled equipment for logging, land clearing, and off-road transportation.

LETOURNEAU

R. G. LeTOURNEAU, INC.
2774 S. MacArthur, Longview, Texas

LET Equipment

C-167

SALES AND SERVICE . . .
Continued

assistant vice-president since 1945. Tullo will continue as the Harrison division general manager.

Blaw-Knox Co.: W. Cordes Snyder, president of Blaw-Knox, recently announced the retirement of N. B. Ornitz, vice-president, and the advancement of William E. Parfitt and M. N. Ornitz to divisional managers. Ornitz, who joined Blaw-Knox in 1942, has been works manager since 1951. Mr. Parfitt has been sales manager of the power piping and sprinkler division.

Special Mention

Frank G. Hough Co.: A 55,000-sq-ft addition to its Libertyville, Ill., plant is expected to be completed this year, bringing the total floor space available to 368,000 sq ft. The new facilities will provide an area 32 times greater than when the company moved to Libertyville from Chicago some 16 yr ago.

Euclid Div., GMC: A new 16-min sound and color movie featuring the model UD 10-ton rear dump is now available through Euclid distributors. The film, entitled "Under the Shovel," shows job application features of the smallest Euclid rear dump now being manufactured.

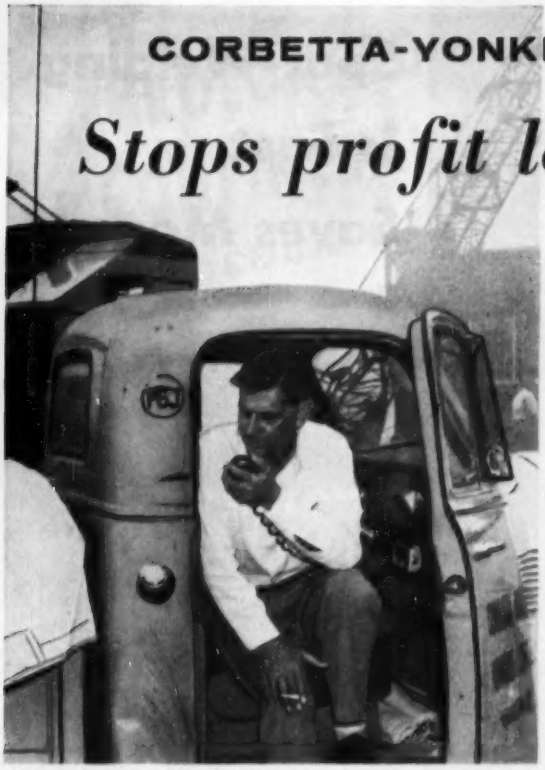
Associations

American Road Builders Assn.: Harvey A. Scribner, chairman of the publicity committee for the 1957 convention and road show, has announced that advertising materials suitable for manufacturers' and dealers' promotions are now available. These include advertising cuts, stickers for use on letterheads, and mailing pieces. Complete information and samples can be obtained from the ARBA office, World Center Bldg., Washington 6, D. C., or from the Publicity Committee, 155 N. Wacker Drive, Chicago 6, Ill.

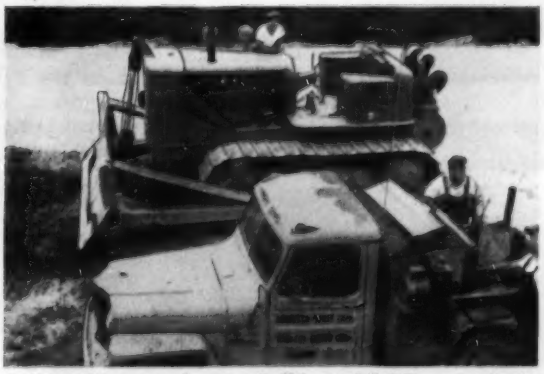
Asphalt Institute: Robert B. McKeagney has been promoted from New England district engineer to deputy division engineer for the Atlantic-Gulf Coast division, with headquarters in New York. He is expected to become division engineer on the retirement of Herbert Spencer on July 1. McKeagney's professional associations include memberships in the Highway Research Board, the Association of Asphalt Paving Technologists, Society of American Military Engineers, American Institute of Mining and Metallurgical Engineers, and Geological Society of America. The Institute also announced the creation of a new district office for Michigan and parts of Ohio and Indiana.

CORBETTA-YONKERS JOINT VENTURE

Stops profit leaks with radio



A Superintendent Should be Everywhere to answer questions and solve problems, but having 2-way radio is the next best thing.



It Costs Money to have a Bulldozer Idle! These mechanics arrived minutes after the breakdown because they were called by radio.

When you've bid on and received the contract for a construction project, every dollar you save goes towards *profits*. That's why the joint venture of Corbetta Construction Co., New York City, and the Yonkers Contracting Co., Yonkers, N.Y., on a three-mile stretch of the New York Thruway, depends so much on its Motorola 2-way radio system.

With about 450 men on the job, using approximately 250 pieces of major equipment to build 8 bridges and miles of retaining walls, as well as the main highway, there are many opportunities to save money with radio.

For example: when a truck, dozer, loader, drag line or shovel breaks down, every minute of delay in getting a crew to fix it costs money for machine and operator, and delays the project. But, with Motorola 2-way radio, it takes only *seconds* for a superintendent to contact a mechanic and have help on the way.

160 Calls per Day reports the base station dispatcher.

Or, if lack of a compressor is holding up an important job, it takes just a few minutes to contact everyone using compressors and find out who can spare one. There may be a question about the location of a utility line. Are the utilities superintendent's drawings up to date? There's no danger of a major mistake when he can pick up his microphone and call field headquarters for the answer.

Planning the next day's work is fast and easy. Just hold a conference over the Motorola radio and save hours of expensive supervisory time. Or when you are pouring concrete. Where is it needed? How much more is wanted? No difficulty getting the answers via radio . . . one man can take care of it.

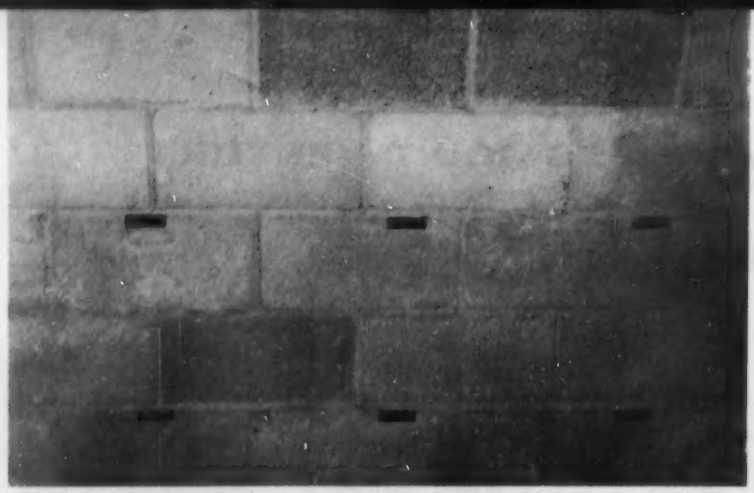
Just a few of the ways in which Corbetta Yonkers cuts costs, increases profits with Motorola 2-way radio. Learn how you, too, can increase profits on your next job. Write, phone or wire: Motorola Communications & Electronics, Inc., Construction Department.

MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD. TORONTO, CANADA

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs you less—specify Motorola."



Steel tabs are set in the masonry wall . . .

. . . A sigma spot-welder makes the joints . . .

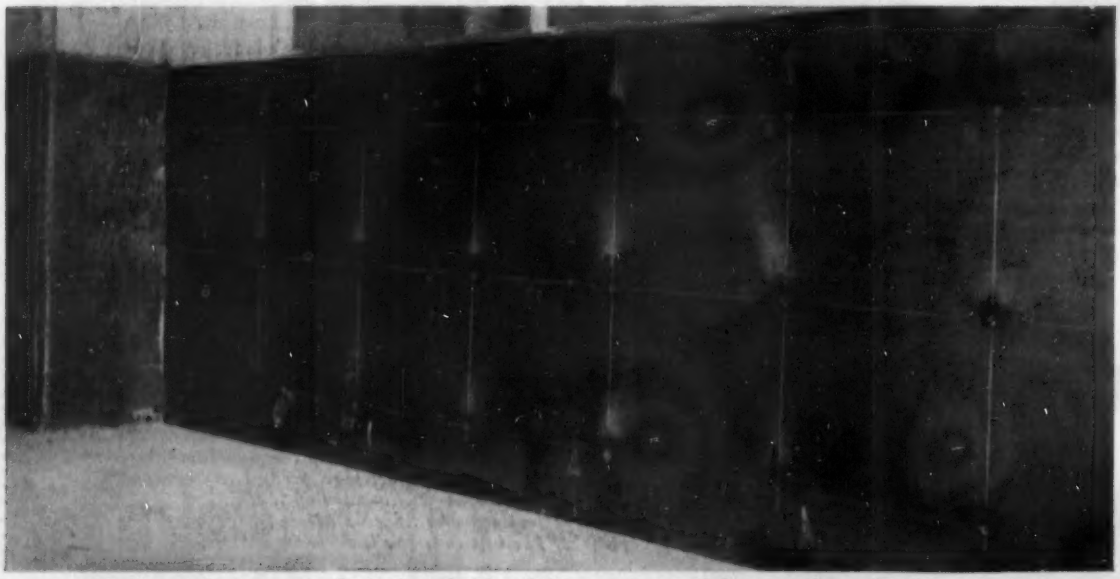
Spot-Welding Is Fast, Saves Money

A NEW APPLICATION of sigma spot-welding has proved faster and more economical than riveting or other welding methods in placing a steel sheet covering to protect the concrete block walls of a Post Office building in Seattle, Wash.

Howard S. Wright Co. of Seattle reports the use of sigma spot welding on the job brought a savings of $1,400. Average production time was only eight seconds per joint, including positioning, holding, and welding with Linde Air Product Co. equipment.

The 14-ga steel plates are sigma spot-welded to 16-ga steel tabs set in the walls. Tabs are spaced 20 in. apart horizontally and 16 in. apart vertically.

It is not necessary to bore any holes in the steel sheets. They are clamped in place before welding. A plate fitter marks the location of each wall tab in chalk on the outside of every plate. A welding operator then makes the welds with a portable machine. Each weld has a tensile strength equal to a ⅛-in. steel rivet.



. . . And the job is completed quickly, it's neat, and it requires little grinding

PROLONGED CONFINEMENT COUNTS

...when the public is watching and listening

Clearing the way for the New York Thruway. Contractor must blast along heavily traveled thoroughfare . . . next to roads, homes, buildings, power lines. Problem: get good breakage . . . with good control.

Blast initiated at bottom of holes using ROCKMASTER millisecond delays in an alternate pattern. Prolonged confinement keeps explosives force working on burden . . . breaking rock. Entire mass lifted only few feet.

Well controlled heave. Traffic and Thruway move ahead. Well broken pile ready for quick removal. Here's maximum explosives efficiency . . . minimum vibration . . . without loud air snap, damage, and complaints.

PROLONGED CONFINEMENT—the Rockmaster® way

When you're blasting along Central Avenue, the eyes and ears of all Yonkers are on you. Using the ROCKMASTER method with its *prolonged confinement* of explosives force, Yonkers Contracting Co. and Corbetta Construction Co. got good breakage and good public relations in all their blasting.

Prolonged confinement counts! The right combination of ROCKMASTER millisecond delay electric blasting caps and Atlas explosives makes possible—

- **good control**
- **improved breakage**
- **greater efficiency**
- **better public relations**

Before your next blast, why not go over your *specific* problems with your Atlas representative? He'll help you get the most out of the ROCKMASTER method and your explosives. And get "Better Blasting"—Atlas' informative newsletter on latest methods and materials. Write us to put your name on our mailing list today.

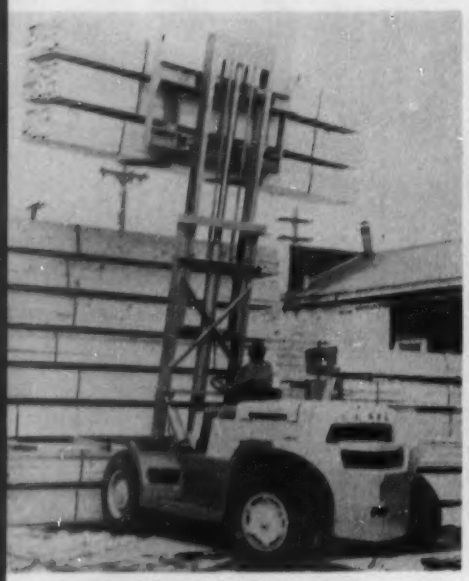
EXPLOSIVES DEPARTMENT

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

offices in principal cities

Construction Equipment News . . .



For Rough Terrain

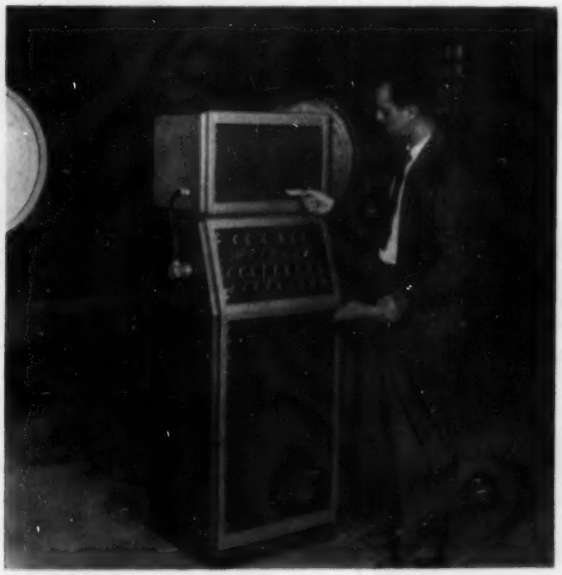
Clark's 15,000-lb capacity fork truck—designed for heavy outdoor work—features dual-wheel drive, power steering, and a weighted front axle for good maneuverability over rough terrain. Called the YL-150, it travels at 20 mph loaded, can climb 30-deg grades. Lift speed is 50 fpm.—**Clark Equipment Co., Battle Creek, Mich.**

Power-Hydraulic Controls

Link-Belt Speeder's new 3-yd K-608 shovel utilizes a Speed-O-Matic power-hydraulic control system—a closed circuit that keeps the hydraulic lines filled with oil. Quick operating pressure is obtained by actuating variable-pressure valves that transmit pressure through the oil to all operating cylinders. The shovel is powered with a choice of either at 276-hp Cummins or a 282-hp GM diesel, both equipped with torque converters. Standard tracks, which provide 12,528 sq in. of ground contact area, are 36 in. wide. Independent chain crowd, retractable crawler side-frames, and self-cleaning tracks are other features. — **Link-Belt Speeder Corp., Cedar Rapids, Iowa.**

Longer and Wider Bowl Means 18-yd Loads

Faster loading, better boiling action, and bigger loads are claimed for LeTourneau-Westinghouse's C Fullpak scraper. Heaped capacity has been increased to 18 yd, while the 12.2-yd struck capacity of previous C Tournapulls has been retained. A longer, wider and smoother bowl and a new curved deflector plate on top of the tailgate mean quicker loading and better boiling action. The push block, lowered to match most push tractors, is tied to the bowl by straight beams so that push power is transmitted directly to the blade. GM or Cummins engines are available with sliding gear or constant mesh torque converter transmissions.—**LeTourneau-Westinghouse Corp., Peoria, Ill.**



Punch Card Batch Plant

When a punch card is inserted into an IBM machine no bigger than a filing cabinet, the Helco-matic batchmaster selects and weighs out precise amounts of any combination of material. To change the combination, the operator simply inserts another card. When repetitive batches are required, the plant automatically recycles itself. The IBM unit is a controlled closed circuit that is virtually immune to vibration, moisture, and dust.—**Heltzel Steel Form and Iron Co., Warren, Ohio.**

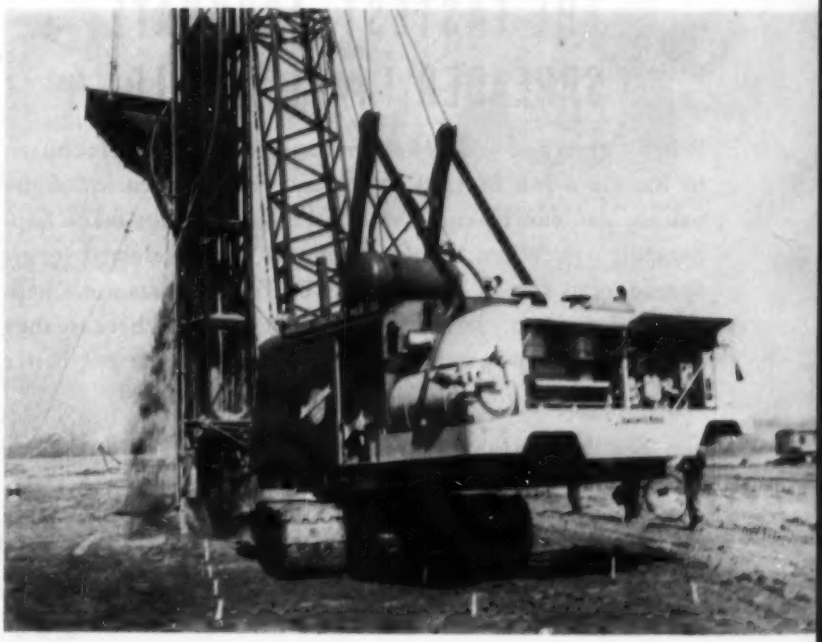
Digs 20-ft Deep

Similar in design to Koehring's ½ and 1-yd machines, the new ¾-yd 305 excavator has a rated lift crane capacity of 25 tons on truck chassis and 15 tons on crawlers. Digging depth with the hoe attachment is 20 ft. The all-welded turntable is equipped with integral sidestands and main cross shafts that revolve on antifriction bearings. Self-cleaning crawlers, automatic traction brakes, and a mechanical cam-type booster on the main drum clutches are other features. —**Koehring Co, Milwaukee, Wis.**

I-R's 900-CFM Compressor Weighs Only 14,340 lb

Ingersoll-Rand's new 900-cfm compressor, shown powering a 22,000-ft-lb hammer, weighs only 14,340 lb loaded with fuel, oil and water. Like other models in the Gyro-Flo line, the 900-cfm model is an oil-cooled, two-stage, rotary sliding vane portable with a combination oil separator and air receiver. It is driven by a 6-cylinder GM 110-series diesel designed to retain its rated brake horsepower at high altitudes. The 24-v battery, and an ether-capsule system for extremely low temperatures, assures easy starting. The compressor is 15¼-ft long, 6-ft 10-in. wide, and 9-ft high when mounted on pneumatic tires.—**Ingersoll-Rand, 11 Broadway, New York 4, N. Y.**

(Continued on next page)



JOB: Torrejon Air Base, Madrid, Spain
CONTRACTOR: Brown-Raymond-Walsh

Photo By: William H. Greene

THE FASTEST, ACCURATE SPREADER IN THE WORLD!

When a great and widely known construction group is chosen to handle a job of vital importance to the security of the nation, you can be sure that the choice was not made haphazardly . . . When Brown-Raymond-Walsh selected Jersey Spreaders to spread aggregate at Torrejon, it was not a haphazard decision . . . Jersey Spreaders were chosen because they had the speed, power and dependability to do faster, better work—*and had proven it on the big jobs everywhere!*

Write now for complete information and illustrated literature.

JERSEY SPREADER

MANUFACTURERS OF THE JERSEY SPREADER

TRACTOR SPREADER COMPANY

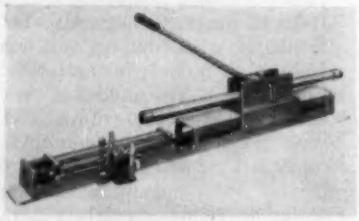
HASBROUCK HEIGHTS, NEW JERSEY

REG. TRADE MARK

No. 38-17

EQUIPMENT NEWS . . . Continued

WASHING AND SCREENING PLANT—Pioneer's new portable sand and gravel washing plant, designed especially for close to roadside production, turns out two sizes and oversize of gravel and one size of washed sand simultaneously. According to the manufacturer, it has a production capacity of up to 340 tph. The standard unit consists of a 5x12-ft three-deck gradation screen, a 30-in.x25-ft double-screw fines dehydrator, a 30-in.x35-ft on-the-plant feeder conveyor, and 18-in.x25-ft and 36-in.x25-ft side delivery conveyors. Because of the varied field conditions and product specifications encountered in washing and screening sand and gravel, the new plant, called the 512-VW, is being offered with only the basic unit as standard equipment. Other units intended to adapt the basic plant to local conditions are offered as optional equipment. The standard plant is mounted on a channel frame semi-trailer with rear-wheel equalizer and fifth wheel on the front, and eight 9:00x20 dual mounted rubber tires on the rear. Total weight, less side delivery conveyors, is 55,000 lb.—**Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis, Minn.**



PIPE PUSHER—The new Speed-Thru pipe pusher, operated by one man handling two controls, pushes pipe 21 in. with each thrust. Operated by gas engine, dc truck power, or ac electric hydraulic power unit, the unit also serves to pull pipe as rapidly as it can push it. The pusher can install pipe at the rate of 4 fpm through high density formations.

(Continued on page 235)

Here's the Inside Story of Why You Get Lasting Accuracy, Eliminate Costly Repairs with . . .

Brunson's Patented

DUSTPROOF BALL BEARING CONSTRUCTION!

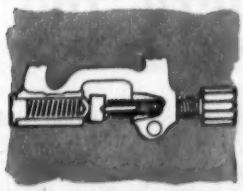
Engineer's Transit Model 50

Think surveying instruments are all pretty much alike? The "inside story" shows you why Brunson instruments are different—why they assure lasting accuracy and minimum maintenance unrivalled by any other instruments. The big difference is dustproof ball bearing construction!

Located in the spindle and telescope axis, Brunson ball bearings are permanently lubricated by an all-temperature grease and sealed against dust and moisture. Preloaded and accurate to 5-millionths of an inch, these ball bearings provide highest possible instrument accuracy. With dust sealed out and lubricant sealed in, wear is practically eliminated by the smooth ball bearing action. That's why your Brunson instrument stays accurate and operable year-in-and-year-out, where others fail. You save hundreds of hours in on-work time, avoid costly errors, slash routine repair and maintenance expense to a level undreamed of in the past.

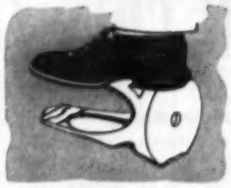
You pay no more for Brunson's exclusive ball bearing construction. Mail coupon today for the complete "inside story".

You Get These Big Advantages, Too!

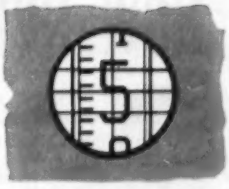


Wobble Pin in Tangent Screw Point—Enables your Brunson instrument to stay "on point" by eliminating strain and wear points that cause slippage.

Long and Short Shots in Collimation—Long and short shots are all in exactly the same straight line. No attachments needed for sharp focus at even 42 inches.



Sturdy, Heat Treated Cast Truss Standard—Supports over 200 pounds without bending or warping. Strong construction, throughout, withstands even the roughest handling.



Exceptionally Accurate Stadia Readings—Provided by coated lens with extra-sharp focus and strong, "no sag," Fiberglas cross wires. Wide field of view.

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Nylon cord tires reduced off-the-road tire failures...

NOW NYLON CUTS TRUCK TIRE COSTS, TOO

JOHN GALLAGHER, Gallagher & Burk, Inc., Oakland, California, reports:

"We tried our first nylon cord tires on heavy, off-the-road equipment, where tires have to be able to take it. When we saw how they cut down tire failures, we began switching our trucks to nylon cords, too.

"Since then we've had far fewer truck tire failures—less carcass damage and fewer impact breaks. What's more, nylon cord truck tires give us 33% more retreads, a big help in bringing down tire costs.

Plans an All-Nylon Fleet

"There's no doubt about it—we're sold on nylon cord tires. With 350 now in service, we specify nylon cord tires for all replacements and on all new equipment. Soon we expect to have a 100% nylon cord fleet."

PROVE TO YOURSELF that nylon cord truck tires give more mileage, more retreads—lowest cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes the tough nylon yarns, does not produce tires.)

DU PONT NYLON for TIRE CORD

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

NOW . . . IN PASSENGER-CAR TIRES, TOO . . . THE STRENGTH OF NYLON . . .
FOR UTMOST SAFETY . . . SUREST PROTECTION AGAINST TIRE TROUBLE

COMMENT
from the BUTLER ENGINEER

Of Meat-loaf, Bourbon and Automatic Firsts

A bigger "whew" than ever this year after riding the whirling carrousels of the

A. E. D.
Ready Mixed Concrete meeting
National Concrete Masonry and the
National Sand and Gravel conventions.

Wonderful to see our old friends and meet so many new ones. I am however, coining a new name for the festivities — the "meat-loaf-and-bourbon-circuit".

Your Butler Engineer came back from them all with two more pieces of luggage than he took . . . a bag under each eye.

•

Terrifically successful though—every one of 'em. And I'm tickled a rich, rosy pink at the reception given our exhibits. We showed automatic batching equipment — all hooked up and working.

Mighty, mighty interesting what has happened in the concrete batching field. Only a short time ago when we processed orders for batchers it was assumed that unless otherwise marked, they were to be manually controlled. Today it's the other way 'round. Orders are assumed to be for *automatic* batchers unless definitely marked "MANUAL". And these are as scarce as Model T Fords. About four years ago the Butler organization took a good, long look deep into our pet crystal ball. In it we saw the words, "Automation is coming! Get ready". The good old c. b. never fails. Result? Butler was in the field first with the best — from one man operated Roadbuilders Plants to punched-card controls for the Ready Mixed Industry.

Stay healthy,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

The unit consists of the pipe pusher, a choice of power, and 25-ft long hydraulic pressure and return hoses equipped with quick couplers—**Mercury Hydraulics, Inc., 2440 Blake St., Denver 5, Colo.**

MOUNTS TUBELESS TIRES—Mounting and dismounting tires on all drop center wheels or rims from 17½ to 24½ in. can be handled by a new tubeless truck tire changer. To mount a tire, the wheel is laid on a frame and clamped by a self-centering, air-powered chuck. The tire is laid on the wheel and one rotation of a powered mounting arm slides each bead over the rim without touching the air seals. The unit comes with an electric motor that operates on 110-220v and an air chuck that operates on 140-175 psi. A double power air cylinder is available for low pressure lines at extra cost.—**Bishman Mfg. Co., Osseo, Minn.**

POWER BUGGY—The new Cmetco power buggy will carry a 2,250-lb load up a 25% grade, stop with the load, and then resume its climb, according to the manufacturers. The new buggy, with a 13.5-cu ft capacity, features automative-type drive and instantaneous direct shift from forward to reverse. It can turn around within a radius equal to its own length. The transmission has a multi-disk double oil-type clutch that eliminates the foot clutch.—**Creative Metals Corp., 1290 Powell St., Emeryville, Calif.**

(Continued on next page)

use JOY SURGEPRUF
. . . THE NON-SKIVE COUPLING WITH THE DOUBLE-WEDGE GRIP

PERMITS THE USE OF MORE ABRASION-RESISTANT, RUBBER-COVERED HOSE

Insure longer wear in your hydraulic hose assemblies—and at the same time, save assembly time by avoiding old-fashioned skiving. Joy Surgepruf re-usable couplings make *both* advantages possible. Their exclusive "double-wedge" grip lets you use tough, abrasion-resistant, rubber-covered hose instead of the braided type —without any need for skiving the hose at the connection.

NO SPECIAL ASSEMBLY TOOLS REQUIRED

You need no mandrels or special tools to make up Surgepruf assemblies. No extra cost or special method is involved.

CAN BE RETIGHTENED WHEN LOOSE ON THE HOSE

Machine vibration or hose flexing can loosen any hydraulic coupling on the hose in time, but Surgepruf Couplings can be easily, quickly retightened on the job to stop a leak—*another* exclusive feature.

Surgepruf Hose Couplings are made to JIC Standards. Assemblies are available in many sizes and lengths, and in both single and double-wire reinforced types for medium-high and high pressure service respectively. *Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*

Write for FREE Bulletin 10-23

IF YOU FASTEN *ANYTHING* TO CONCRETE OR STEEL...

AUTHORIZED POWDER ACTUATED **DRIVE-IT** TOOLS Power Loads • Drivepins SALES • SERVICE

See Your *DRIVE-IT*® Dealer Who Offers You:

- The fastest method of fastening to concrete or steel with *DRIVE-IT* powder-actuated fastening tools.
- Expert fastening assistance; on the job service. His help ranges from technical reports to tool service and repair.
- The *DRIVE-IT* 330, lightweight, easy-operating stud driver—most advanced powder-actuated tool on the market.
- Over 50 types and sizes of *DRIVE-IT* drivepins—designed for any fastening job.
- *DRIVE-IT* dealers are fastening specialists—see your dealer to learn how you can make money by using *DRIVE-IT* powder-actuated fastening tools.

See Your Dealer For Trade-In Bonus Offer

DRIVE-IT model 330

is used profitably for fastening to concrete and steel by:

- Electrical Contractors
- Heating and Ventilating Contractors
- General Contractors
- Sheet Metal Contractors
- Plant Maintenance Men

SEND COUPON TODAY FOR A DEMONSTRATION

POWDER POWER TOOL CO.
5001 S. E. Johnson Creek Blvd.
Portland 6, Oregon

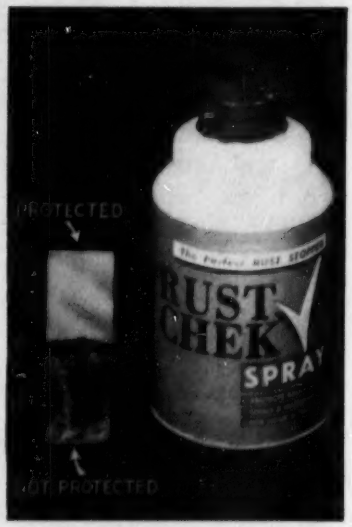
Please have the *DRIVE-IT* dealer near me give a demonstration of *DRIVE-IT* powder actuated tools.

Name_____

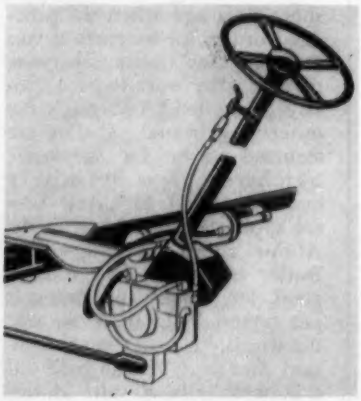
Address_____

City_____ State_____

© Copyright 1956 by Powder Power Tool Co., Portland 6, Oregon



CHECKS RUST—A rust preventive spray for use on small tools and instruments comes packaged in a 12-oz aerosol spray container that can deliver 80 sq ft of coverage in the form of a clear, dry, waxy film to a thickness of .0005. The manufacturers claim that unlike oils the new preventive does not collect dust or dirt. The film does not have to be removed when the tool or instrument is removed from storage and readied for use. The film is worked off as the tool is handled, and in some applications, such as on power saws, it serves as a lubricant.—**Eastern Aerosol Products, Newfoundland, N. J.**



POWER STEERING—A power assist steering unit can be easily installed in 2 hr or less on any truck with an existing air supply. Called Air-O-Steer, the unit does not affect the existing air supply and requires only ten bolts for complete installation without welding, burning or alterations to the truck. The installation kit includes the cab control valve, valve-actuated pitman arm, axle bracket, ram, tie-rod clamp and brackets, and all hoses and necessary

Electrified for continuous high speed production... the AUSTIN-WESTERN 61-E crushing and screening plant

Here's a single pass, portable crushing and screening plant that operates continuously at *full production speed* to deliver a constant flow of uniform product at low operating cost. It's the Austin-Western 61-E . . . *electrified* to make it the perfect plant for contractors, counties or townships . . . on big jobs or small.

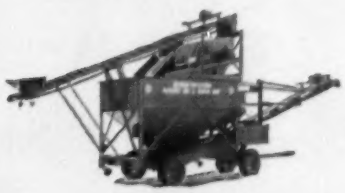
Individual electric motors (powered by a diesel driven generator) operate feeder, conveyors and double deck screen through short-coupled V-belt drives. There's no mechanical loss from inefficient gear boxes and open chain drives. The result is maximum operating efficiency for low-cost, high-volume production.

What's more, the 61-E plant is easy to move, simple to operate and maintain because of design and construction extras like these:

- No jacks are required because the heavy welded frame and dual rear wheels give complete stability.
- Push button electric operation eliminates clutches and clutch control levers.
- Electrical hook-up is simplified by using standard motors and control units, and by the elimination of complex wiring systems.
- The single-jaw crusher operates at high speed because it is supported on a heavy forged chrome-vanadium steel shaft mounted in over-sized self-aligning bearings.
- Positive protection against uncrushable material is assured by machined toggle plates in the crusher.

It will pay you to see this plant for yourself at your nearby Austin-Western Distributor. Or, to get detailed information, send for our new 61-E booklet containing complete specifications. Write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Optional equipment like this new Portable Bin and Screen Unit, ideal for producing specification material, makes the 61-E one of the most versatile plants available.



Distributors in Principal Cities of the World

AUSTIN-WESTERN

CRUSHING, SCREENING & WASHING EQUIPMENT

BALDWIN-LIMA-HAMILTON

Construction Equipment Division LIMA, OHIO, U.S.A.

C&D Movall--Pictorial Proof of Versatility

FEEDS LIMESTONE INTO HOPPER at controlled rate for Cia. Peruna de Cemento Portland, Atacongo, Peru. Operator controls discharge rate from tractor seat, stops ejector when 8-yard crusher is full. Here two 25-yard Movalls, powered by Cat DW20 tractors, replace six 8-yard side-dump trucks.

SPREADS PERVIOUS FILL IN 18" LIFTS at Santa Felicia Dam in California. Movall dumps behind wagon tires, safely at any speed tractor can travel because dozer-type ejector keeps center of gravity low. Depth of spread is uniform, controlled by speed of tractor (4" at 20 mph., 18" at 3 mph.). Movalls also can dump while turning at end of road fill, thus retaining fines on top.

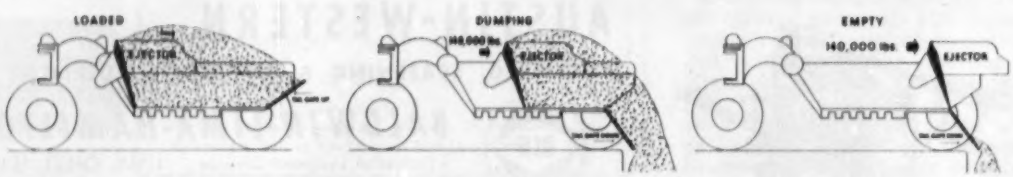
DUMPS OVER EDGE OF FILL with tractor either straight ahead or jackknifed. Drive wheels are always on good footing; center of gravity stays low. Positive ejection with 140,000-lb. push enables Orlando Construction Co., to dump 25-yard load of rock and dirt in 12-14 seconds on Massachusetts Turnpike. Movalls dump cleanly and quickly any material you can top load.

DUMPS ON GRADE safely from any position or on any level. Load is pushed straight back by 140,000-lb. push of dozer-type ejector. There's no raising of load, no danger of wagon tipping or damaging mechanism. Frozen earth and rock being dumped here on St. Lawrence Seaway by C. A. Pitts, Ltd., was loaded by 6-yard shovel.

Movalls are easily interchanged with scrapers. Two sizes: Heaped 25-yd. for DW20 and DW21; heaped 16-yd. for DW15 and DW10 tractors. Interchangeable yokes permit use with various prime movers.

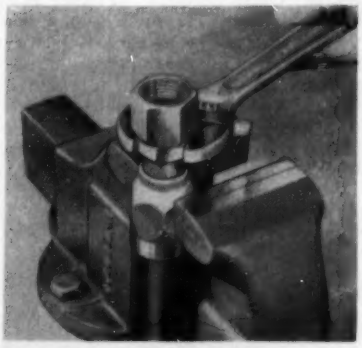
BUY AND TRY—Ask your Caterpillar-C & D dealer for a demonstration NOW, or write C & D Division, Yuba Manufacturing Company, Perkins (suburb of Sacramento), Calif. Phone: GLadstone 5-8592.

HOW IT WORKS



fittings. Heart of the unit is the valve-actuated pitman arm. Turning the steering wheel exhausts air pressure on one side or the other, causing the ram piston to move back and forth, thereby moving the tie rod. If the air supply fails, the system automatically reverts to manual steering.—**Air Applicators, Inc., 1522 S. E. Union Ave., Portland 14, Ore.**

ROTARY COMPRESSOR—The first in a proposed line of Joy rotary compressors is the new Airvane, with an air delivery rating of 600 cfm at 100 psi. Among features claimed by the manufacturers are a thermal bypass temperature control system, and a controlled-velocity filter-separator unit with primary and secondary action that facilitates the removal of oil from the compressed air. A low center of gravity and a turning radius of 13 ft are other features.—**Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa.**



EASIER MAKE-UP—A new "no-skive" type of re-usable fitting is said to meet the demand for easier make-up of hydraulic hose assemblies incorporating rubber-covered wire braid hose. With the new fitting, consisting of a socket and nipple, the hose cover does not have to be stripped off. Make-up is accomplished by rotating the hose in the socket counter-clockwise, and screwing the nipple clockwise into the hose and socket. The lead thread of the socket cuts through the rubber cover of the hose to permit the following threads to contact the wire braid. The fitting is available with four different connecting ends. Sizes are available for hose of ¼, ⅜, and

Kelley

. . . the finest name in concrete floor finishing equipment

For floating and finishing large areas . . .

THE KELLEY HYDRA-TROWEL

The only hydraulic trowel on the market . . . duplicates the quality of hand-troweling. Four wide dual-purpose blades are used for both floating and finishing. Blade pitch is adjusted by finger-tip control. Stationary guard ring. Low center of gravity assures great stability, eliminates drifting and gyrating. Contractors everywhere praise its effortless operation and the satin-smooth finish it puts on floors.

Write for Bulletin K-103

For floating and finishing small areas . . .

THE KELLEY BANTAM

Here's a terrific machine! Small . . . for confined areas. Light and compact . . . for extreme portability. Carry it in one hand! Fits in the trunk of your car! The Kelley Bantam Power Trowel is ideal for garages and basements and for factory repair jobs. Low center of gravity and unique blade-pitch arrangement put the Kelley Bantam way ahead of all other 3-blade power trowels.

Write for Bulletin K-107

For high-quality, dust-free concrete floors . . .

THE KELLEY COMPACTOR POWER FLOAT

Heavy-duty . . . portable . . . for compaction-floating of concrete or mastic floors. The famous Kelley Compactor scientifically floats dry-tamp topping, drives in tough and durable surface-hardening materials. A must for really good industrial floors!

Write for Bulletin K-101

For grinding surface imperfections . . .

THE KELLEY FLOOR GRINDER

A perfect machine for all general floor grinding. Developed because of increasing demands for a portable floor grinder. Serrated grinding ring is 24-grit silicon carbide, 14" in diameter.

Write for Bulletin K-108

A few good distributor territories still available.

Kelley MACHINE DIVISION

WIESNER-RAPP CO., INC.

285 HINMAN AVE., BUFFALO 23, N. Y.

720 TONS . . . AN HOUR'S HAUL WITH THIS
SAUERMAN TOWER EXCAVATOR

Pioneer's giant excavator is the largest power scraper installation in the sand and gravel industry.

Pioneer Sand and Gravel Co., Seattle, Wash., needs a huge flow of material to supply its ready-mix plants and barges. They're getting it with a 12-cu. yd. Crescent Scraper.

The Crescent handles 480 yds. or 720 tons per hr. over an average haul from 300 to 350 ft. It operates along a 675-ft. span between movable head and tail towers located at the base and top of the 240-ft. high bank.

In addition to high rate of delivery, adoption of the Sauerman Method provides two other advantages over the 5-cu. yd. power shovel that formerly operated off the "toe" of the bank. These are: (1) material can now be taken from anywhere on the bank for blending and selection of gravel, and (2) material can be moved down the slope with no danger of cave-ins.

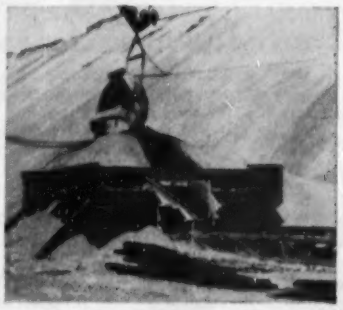
This view gives some conception of the height and steepness of the bank on which the Crescent works.

The tower excavator at Pioneer is mounted on portable towers and engineered by Sauerman for economical excavation in this type of deposit. This same digging tool . . . the Crescent scraper . . . can be engineered to your operation to give you equivalent high production at low cost.

Sauerman Scrapers range from ⅓ cu. yds. up to 18 cu. yds.

Because in most cases it is cheaper to drag material than it is to lift and transport it, *they give you the lowest cost per cu. yd. handled.*

Contact us for information and specific recommendations. Ask for field reports and Catalog A.



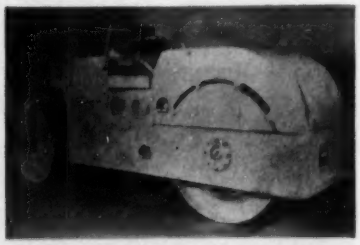
The Crescent delivers to a portable field hopper from which belt conveyors transport the material to the plant.

SAUERMAN BROS. INC.

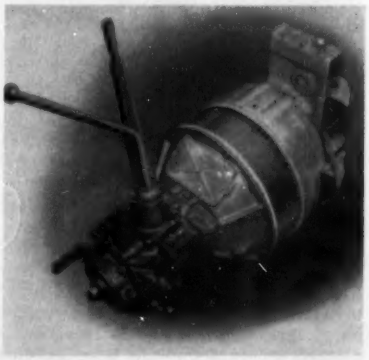
612 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

½-in. inside dia.—**Tube & Hose Fitting Div., Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio.**

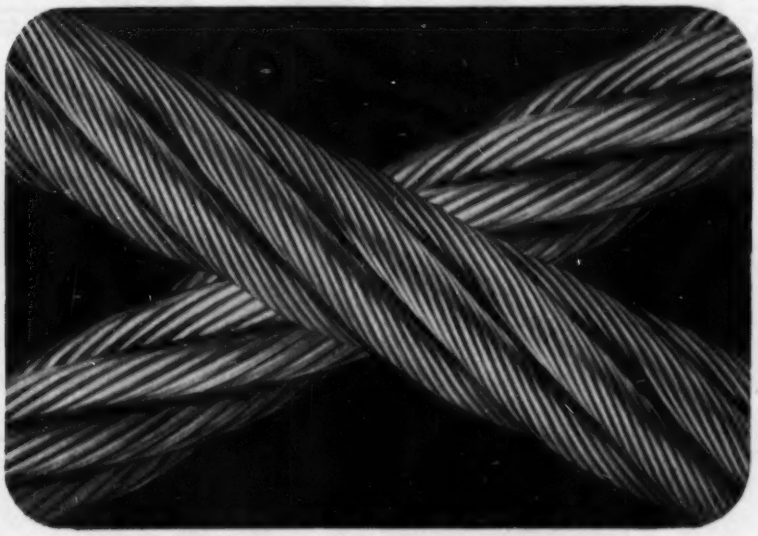


TANDEM ROLLERS—Huber-Warco's line of medium and large size variable weight tandem rollers have been equipped with torque converters and two-speed transmissions as standard equipment. All four models in the line,—the 5-8-ton, 8-10-ton, 8-12-ton, and 10-14-ton tandems—are identical in design. The torque converters and new transmissions are said to offer increased efficiency and more economical operation, especially at slow rolling speeds. Another feature of the new line is a completely adjustable guide roll assembly. Both the kingpin and swivel pin are held in alignment by tapered roller bearings that can be easily adjusted in the field to prevent road scuffing caused by looseness. The steering arm is splined—not keyed—to the top of the kingpin so that the shearing load is spread around the entire circumference of the pin. Other features include two independent braking systems, frame-mounted final drive, removable kingpin mounting, and an all-welded frame with corners double welded and braced. Gasoline or diesel power units are available.—**Huber-Warco Co., Marion, Ohio.**



HYDRAULIC COUPLING—Overload protection, positive acceleration and smooth operation are features of the new Red Seal hydraulic coupling, designed to transmit horsepower and torque through a fluid to improve performance characteristics and to cushion both engine and equipment from shocks of sudden

FIRST WE DEVELOPED 1105 ROPE WIRE.



THEN WE MADE ROEBLING'S

Royal Blue

WIRE 1105 ROPE

1105 takes Royal Blue out of the ordinary wire rope class.

1105 is a rope wire that's new—that's stronger. It's the biggest news in many years.

1105 is the result of more than a century of research and development—it's the wire that gives Roebling Royal Blue the stamina that pays off in service.

Contact your Roebling distributor or write us for the full story.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13325 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6, N. Y.

GASOLINE **BARCO** RAMMER

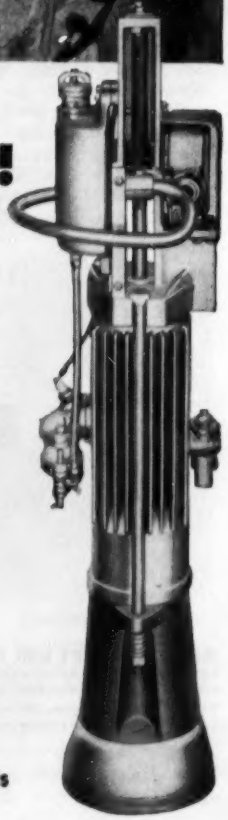
The Key to Better Construction!

NO RECENT TREND in construction has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects—Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments! The increase in the use of Barco Rammers on these jobs has been equally great.

Easily meets rigid specifications—
In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches. ONLY the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

Gets jobs finished on time—
One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

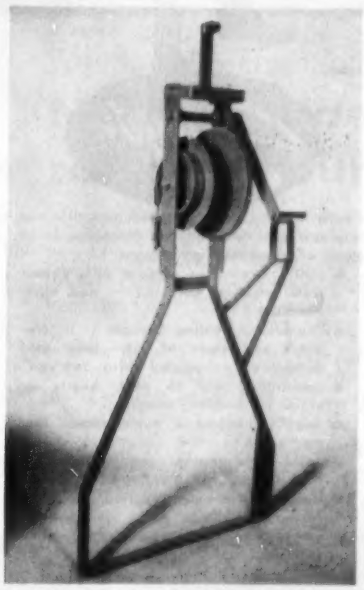
Barco performance pays dividends! We will be glad to arrange a demonstration for you—see our nearest dealer or write.



BARCO MANUFACTURING CO. BARCO **512E Hough Street, Barrington, Illinois**

loads. The new unit is designed for use on compressors, conveyors, blowers, cranes and other equipment.—**Continental Motors Corp., 205 Market St., Muskegon, Mich.**

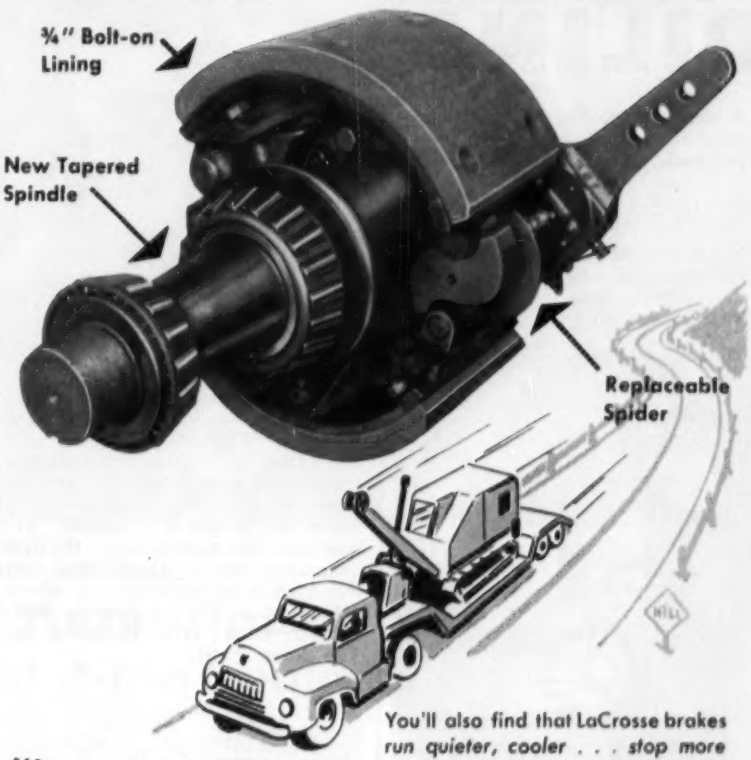
FLOODLIGHT—Designed to be used with 700 or 1,000-w mercury lamps, Westinghouse Electric Co.'s new general purpose floodlight is rugged and weatherproof. Three types of heat-resistant glass lenses are available. Optional mounting brackets provide a choice of flat, slip-fitter, or clamp-base mounting. The light is 20½ in. in dia and 21½ in. long.—**Westinghouse Lighting Div., Edgewater Park, Cleveland, Ohio.**



SAFE STAGE—A new safety swing stage, capable of carrying loads up to 650 lb per machine, has three features which add up to safe operation. First, it has a self energizing brake that insures against loads running down unexpectedly; second, it has a pawl on the gear drum that holds the working position; and third, the crank locks against the winch frame. The Waco safety stage has a drum that holds 100 ft of ¼-in. aeronautical-type cable. Steel gears are

BIGGEST

Safest Brakes on 15" wheels!



When you have to STOP a heavy trailer load barreling down a steep grade, that *EXTRA 52 sq. in. of braking surface* you get on a LaCrosse tandem axle trailer, can mean the difference between life and serious injury — to men and to the equipment being hauled!

Remember, every LaCrosse-engineered trailer brake measures 12¾" x 6" wide — ½" *wider than any competitive lining used with 15" tires.* This means 13 sq. in. more lining per wheel — 52 sq. in. of extra safe braking area on every LaCrosse 4-wheel trailer.

You'll also find that LaCrosse brakes *run quieter, cooler . . . stop more smoothly.* Reason? Special exclusive S-cam design, with worm-gear slack adjusters and direct chamber-to-axle mounting. Linings are tough ¾" bolt-on type, which *outlast ordinary lining 45%,* according to owner records. In addition, LaCrosse now gives you removable bolt-on brake spiders, for quick, economical field replacement as needed—another important advantage found only on LaCrosse.

For free literature describing ten other exclusive LaCrosse advantages, write: LaCrosse Trailer Corp., Gould St., LaCrosse, Wis.

LC-33

LaCROSSE

America's Favorite LOW-BED TRAILER

Save Time on Tough Schedules—

FOSTER RENTAL PILING

A phone call to Foster will provide exact sections of steel-sheet Piling you need. You can always depend on L. B. Foster Company for the piling you specify—in the exact lengths required—and *on time deliveries.*

You'll save time, speed-up pile driving operations and better your job schedules when you Rent Your Piling from L. B. Foster Company.

Foster Rental Piling forms cofferdams used in construction of the piers for the MULLICA RIVER BRIDGE Garden State Parkway

FOSTER RENTAL PILING

Contractors everywhere save on all their piling needs with prompt, exacting service from L. B. Foster Co., Foster's Rental Plan provides a low, fixed expense—gives you an extra advantage in competitive bidding.

STEEL-SHEET PILING • H-BEARING PILE
H-S LIGHT WEIGHT PILING • PIPE PILES

FASTER from FOSTER — WRITE FOR CATALOGS CM-4

RAILS • TRACK EQUIPMENT • PIPE • FABRICATION

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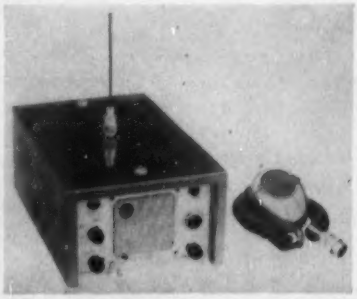
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

EQUIPMENT NEWS . . . Continued

machined and all wearing parts are hardened and ground.—**Waco Mfg. Co., 3555 Wooddale Ave., Minneapolis 26, Minn.**

LIGHTWEIGHT GENERATORS—Weighing only 78 lb each, two new portable generators—an ac and dc model—are rated at 1,500 w, 120 v. Powered by four-cycle engines and fabricated of magnesium castings, the rugged little generators are designed to give instant plug-in power when and where it is needed. According to the manufacturer, the new generators weigh about 30% less less than most other electric plants delivering equivalent power.—**Gen-A-Matic Corp., 14741 Bessemer St., Van Nuys, Calif.**



RADIOTELEPHONE—A small radiotelephone weighing only 21 lb can operate effectively on 6 or 12-v dc, or 117-v ac. Measuring 12x8x5-in., the unit has a range of from one to five miles. According to the manufacturer, it can serve as a base station for a mobile public address system, as well as being vehicle mounted. Built to withstand rough handling, the unit is shock mounted, and all its controls have been recessed for protection. Price of the complete unit, ready to be installed, is $328, fob Palo Alto, Calif.—**Kaar Engineering Corp., 2900 Middlefield Rd., Palo Alto, Calif.**

(Continued on page 247)

We challenge you

to find better

PROTECTIVE CLOTHING!

Toughest by Test FROG BRAND®

illustrated above: ¾ length coat

Sawyer

For every industry where personnel protection and safety are vital, only Sawyer Neoprene Latex Clothing offers all these advantages:

- **100% protection against oils, chemicals, alkalies, abrasion — and other hazards!**
- **"Exclusive Coating Process" . . . (for years and years of extra wear and durability) — *original* with Sawyer!**
- **guaranteed not to peel, blister or crack in ordinary usage!**
- **double interlocked sewn seams that can't come apart!**
- **solid brass or non-conductive fastenings that can't rip off or corrode!**
- **designed for roomy, action-free comfort!**

Sawyer clothing also Rubberized or Oiled. Full range of jackets, pants, coats, hats, aprons for *more* efficiency, *more* economy, *more* protection on every job!

Make us prove it!

Send for complete details and price list.

The H. M. Sawyer & Son Company

A Division of Sawyer-Tower, Inc.
specialists in Protective Clothing for more than a century
9 Thorndike St., Cambridge 41, Mass.

(Advertisement)

No more broken plows on this boulder . . .

New Michigan Turbo-Dozer roots out buried 2-ton boulder

When these pictures were taken, the 2¾-yd. Michigan Turbo-Dozer had just finished clearing some wooded farmland to open up more acreage for cultivation. The farmer asked the Turbo-Dozer operator if he'd try to remove a certain boulder which lay completely buried in the wet loam—he'd broken two plow blades on it. This job—which took the Turbo-Dozer 5 minutes—illustrates what you can do with the Michigan's exclusive power-tilting bowl.

Compare this photo with the large picture. Here the boulder has been brought up to the surface, and the operator has tilted the bowl forward to "float" position to carry it away.

Cut and pry with bowl

Two lateral cuts on the front and back sides of the boulder exposed approximately six inches of stone. Then, crowding in against it, the operator hooked the cutting-edge of the bowl under a projection on the stone—and worked the bowl back and forth through a 33 degree arc to pry it loose. When the boulder loosened, he crowded forward as he raised the bowl—literally *lifted* and pushed the boulder out of its hole.

Full power on all wheels

In addition to its power-tilting bowl, the new Turbo-Dozer features rear-wheel steering: even on turns, *you maintain full power on all four wheels,* except when you declutch the rear axle for highway travel. The 165 hp turbo-charged diesel engine drives through 3-to-1 torque converter, power-shift transmission and planetary-wheel drive axles. This power-train is standard equipment on the Turbo-Dozer: four speeds forward and reverse, top speed 27 mph.

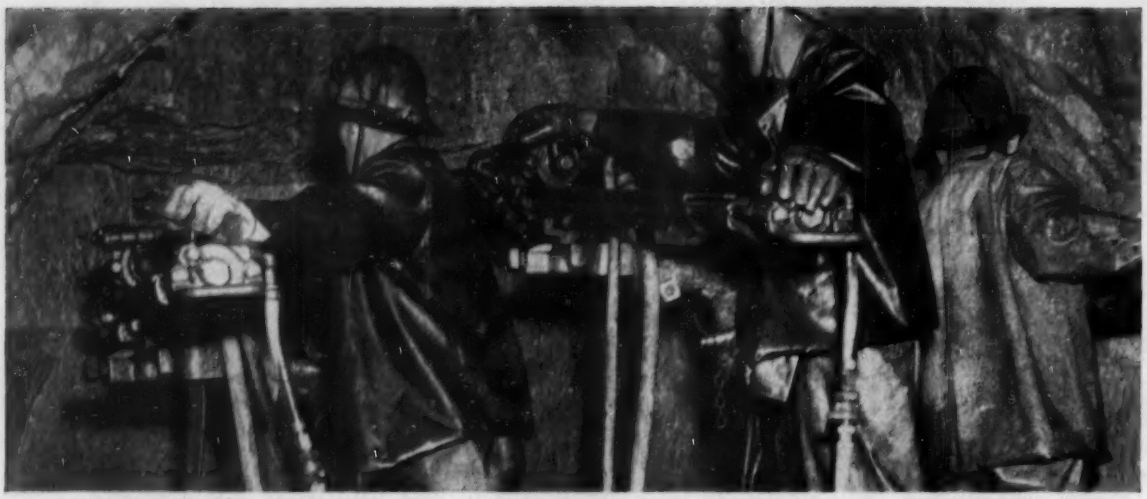
20-page photo booklet

You'll find a full description of the power-tilting bowl, C-frame, power-train and specifications in a 20-page photo booklet—write for a copy. The new Turbo-Dozer combines rubber-tired speed with outstanding traction and power—28,000 lbs. maximum rim-pull, on 18.00-25 low pressure tires or optional 23.5-25. For faster cycles, more yardage or tonnage in every shift, take a look at the new Michigan Turbo-Dozer.

Michigan is a registered trade mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 21, Michigan

CLARK® EQUIPMENT



8,500-FT MINE TUNNEL IN IDAHO. Bethlehem Hollow provided standout performance during construction of a 10 ft x 11 ft bore, for which 33,000 cu yd of quartzite were removed, in lead-and-zinc mine at Burke, Idaho. Drifters are shown making 10-ft blast holes.

Rock-Removal Projects Across the Nation

TAILRACE FOR NEW DAM IN NORTH CAROLINA. About 1,000,000 cu yd of solid granite were blasted to make way for 8,000-ft tailrace, 80-ft wide, at Roanoke Rapids Dam, part of a huge hydroelectric project at Roanoke Rapids, N. C. Bethlehem Hollow, fitted with carbide-insert bits, was used in this rail-mounted drill carriage.

Shown here are several typical rock-removal projects, in widely separated sections of the country. They were selected at random from among hundreds of recent applications of that old reliable, Bethlehem Hollow Drill Steel.

Bethlehem Hollow Drill can always be counted upon for economical rock drilling, regardless of the nature of the application or depth of blast holes, because it is rolled from a tough, fatigue-resisting steel—steel that can take it.

We carry Bethlehem Hollow in stock in our mill depot in all commonly used sizes. You can also obtain it from your local converter. Give Bethlehem Hollow a workout on your next job. You'll like it!

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

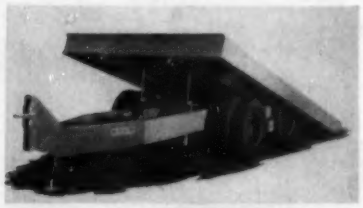
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

WATER-INTAKE TUNNEL BENEATH NIAGARA RIVER. Bethlehem Hollow Drill provided good service as contractor removed 9,200 cu yd of rock, most of it limestone, for 6,000-ft water-intake tunnel for Town of Tonawanda, N. Y. The new tunnel is about 100 ft beneath the Niagara River.

HIGHWAY RELOCATION IN ALABAMA. This battery of wagon drills, using 1-in. hexagon Bethlehem Hollow, fitted with carbide-insert bits, is shown biting into medium-hard limestone on Sand Mountain, near Gadsden, Ala. This highway contract called for the removal of about 150,000 cu yd of rock.

BETHLEHEM HOLLOW DRILL STEEL • CARBON AND ULTRA-ALLOY •



TILTING PLATFORM—Small shovels, trenchers, finishers, and crawler tractors with gross weight ratings up to 26,000 lb can be transported with ease by the new 13-ton capacity, tandem axle trailer manufactured by the Miller Tilt-Top Trailer Co. A low platform height of only 33 in. is obtained by placing the pivot point of the tilt-top trailer as close as possible to the rear of the tandem axle assembly. The platform measures 8x16 2/3 ft, and is decked with 2-in. oak. Called the OT-13, the trailer is mounted on eight 7.50x15, 12-ply tires. Optional equipment includes a twin hydraulic tilt control, electric brakes, lights, and safety chains.—**Miller Tilt-Top Trailer Co., 430 S. 92nd St., Milwaukee 14, Wis.**

MAGNETIC INSPECTION—Magnaflux Corp. has developed a portable magentic inspection device that is particularly practical for field inspections because it requires no electric power. The 22-lb unit, called the YM-5 Yoke Kit will find surface cracks, fatigue and stress cracks, cracks in welds, and other metal flaws. The unit, complete in a compact storage kit, consists of a 5-lb magnetic yoke with hinged legs and angle-cut tips that will fit almost any shape; a wet bath and a spray gun to apply it, and a dry magnetic powder that is applied with powder bulbs. The yoke is placed on the metal part perpendicular to the direction of suspected cracks, and either the wet bath or the dry powder, depending on circumstances, are applied between the yoke legs. Indications of surface cracks are readily apparent. The yoke has a magnetic pull of over 40 lb on flat surfaces. The fob factory price is $145.—**Magnaflux Corp., 7300 W. Lawrence Ave., Chicago, Ill.**

(Continued on next page)

New help in selecting finest mechanics tools . . .

***Snap-on**

TOOL CATALOG

It's here — your new *Snap-on* tool catalog describing in detail the *Snap-on* line of over 4,000 tools. Big pictures and complete specifications help you select the tools you need. Sockets, wrenches, screwdrivers etc. are shown both individually and in full tool sets.

Complete descriptions and illustrations of *Snap-on's* outstanding line of tool chests and cabs. Full details on *Snap-on's* wide range of shop equipment including bench grinders, electric drills, valve refacers and others.

Send for this new *Snap-on* catalog "V" now or ask your *Snap-on* man to give you your copy.

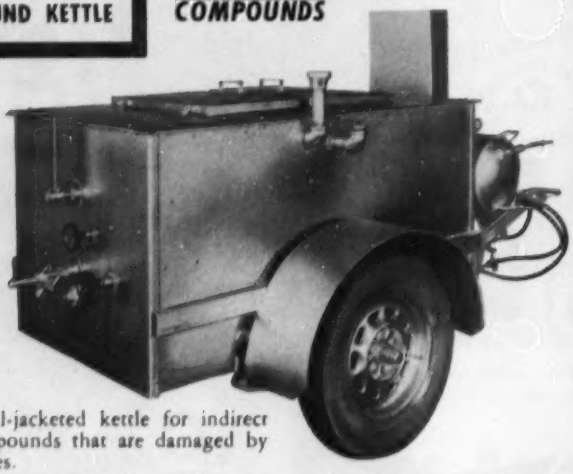
*Snap-on is the trademark of Snap-on Tools Corporation.

SNAP-ON TOOLS CORPORATION

8042-D 28th Avenue, Kenosha, Wisconsin

White
F-10 COMPOUND KETTLE

. . . FOR LOWER COST MELTING OF JOINT COMPOUNDS



TOP QUALITY, oil-jacketed kettle for indirect heating of compounds that are damaged by high temperatures.

FOOLPROOF manual burner adjustment

LOW COST of $998 f.o.b. factory, complete with two thermometers (one for heating-jacket oil, one for compound), manual agitator, oil burner, steady rest, towing eye, tires. Engine agitator or propane heating available

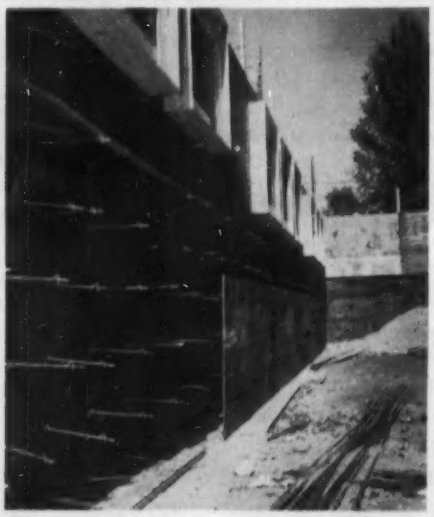
CAPACITY: 120 gallons of compound

FOR LITERATURE, WRITE

OTHER PRODUCTS

Asphalt Plants,
Tool Heaters,
Surface Heaters,
Torches and Burners

WHITE MANUFACTURING COMPANY, ELKHART 6, INDIANA



New System Speeds Construction on Church Job!

The Gates systems take care of any job, large or small, and do them at savings in time, labor and other costs!

A case in point is this construction of the foundation of the Mayflower Congregational Church in Englewood, Colorado.

Here, the Gates forming system uses rod-type ties to do an efficient and economical job of a good-sized project. General Contractor George H. Allen is very pleased with the results.

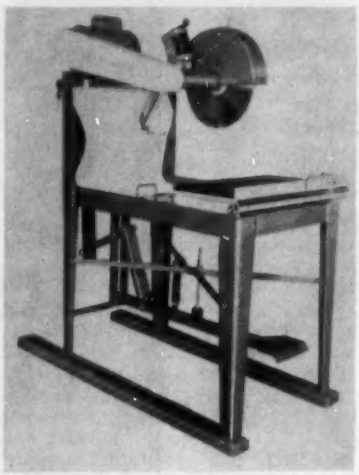
You can handle all types of construction with Gates systems. Their use assures top quality construction, plus on-the-job savings in time and labor!

Contact your nearest Gates Dealer or write direct.

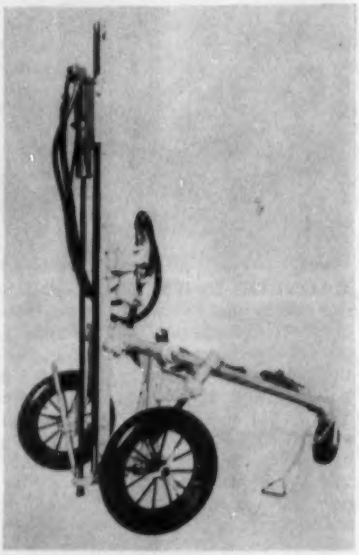
GATES & SONS, INC.

80 SO. GALAPAGO ST. • DENVER 23, COLORADO

EQUIPMENT NEWS . . . Continued



MASONRY SAW—Diamond Tool Associates are now in production with their new wet or dry cutting masonry saw. Designed for blades up to 14½-in., the saw features a self-priming pump, life-time lubrication of bearings, and dust free operation when wet cutting.—**Diamond Tool Associates, P. O. Box 85, 940 E. El Segundo Blvd., Hawthorne, Calif.**



WAGON DRILLS—Two new air-driven wagon drills, featuring automatic controls grouped conveniently on a motor that can be re-positioned along the mast, have been introduced by Thor Power Tool Co. They are the SW-1 above, a general purpose model, and the BW-2, a heavy-duty unit that replaces Thor's BW-1 wagon drill, introduced in 1948. The SW-1 drill is a compact unit that mounts either a Thor 75 or 77 sinker rock drill or a Thor 82 or 92 drifter. It is equipped with a saddle and cone permitting mast adjustments for drilling holes through a full 360

IN CONSTRUCTION... equipment-hours saved are the same as cash!

ALEMITE
"ON-THE-JOB" LUBRICATION

1. Boosts Production! By cutting expensive downtime for lubrication—increasing output of both men and equipment!

2. Saves Money! By giving bearings top protection from dirt, dust and grit—guarding against costly breakdown!

3. Saves Time! By bringing clean, fresh lubricant right to the machines—where you need it, when you need it!

• Here the sheaves of a shovel get a shot of clean, new lubricant. Operator is using Alemite Hand Gun 6243-J. This lever-type gun has plenty of power to push out old grease and dirt—capacity to serve many bearings without refilling!

Heavy-Duty Hand Gun for Toughest Lube Jobs!

Handles all pressure gun greases. Spring-primed for positive delivery. Follower rod disappears after filling. Pressure up to 10,000 lbs., lubricant capacity 24 oz. Model 6243-J.

• Alemite Loader Pump 7181-L fills a hand gun quickly—easily. Just eight strokes of the pump fill the gun completely. No mess, no waste, no troublesome air pockets. Lubricant is protected at all times from destructive dirt, dust and grit.

Loader Pump Saves Time in Refilling Hand Guns!

Clean, fast, mechanical loading of all hand guns equipped with standard Alemite Loader Fittings. Sizes to fit original refinery-filled 120- and 400-lb. drums, or 25- and 35-lb. buckets. Model 7181-L.

• The track support rollers of this power shovel are getting positive lubrication protection from this Alemite 6521-B Tractor Bucket Pump. 35-pound capacity means less time wasted in refilling, and lubricant reaches bearings "refinery clean." Fast—efficient!

Bucket Pump—Built Specially for Construction Work!

Sturdily built to give rugged construction industry service. Handles all regular pressure gun or gear lubricants. Develops 3,000 psi pressure. Delivers 1 lb. in 17 strokes. Tank holds 35 lbs. Model 6521-B.

ALEMITE, Dept. F-46
1850 Diversey Parkway,
Chicago 14, Ill.

Gentlemen: Please send me your FREE illustrated booklet showing Alemite "On-the-Job" equipment and containing complete information on Alemite lubrication methods.

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Company _____

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ALEMITE

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Products of STEWART-WARNER CORPORATION

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Drivers last longer...

when heavy-duty trucks use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 60, New York 16, N. Y.

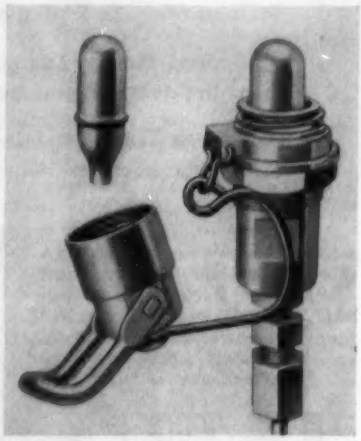
Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

JOHNS-MANVILLE JM PRODUCTS

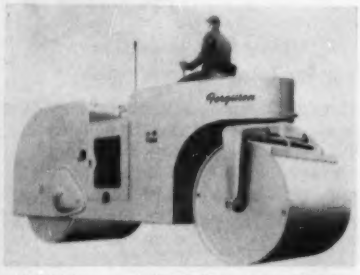
Johns-Manville

INDUSTRIAL FRICTION MATERIALS

deg in any direction. The SW-1 features a chain-drive mast that permits complete reversal and consequently longer wear. It is equipped with external wheel brakes. The heavy-duty BW-2 can be used with Thor's 82 or 92 drifters as well as with the 105 drifter. The mast has a lever-operated blower control and a motor feed control with variable feed ranging from 2 in. per min to full speed. The chassis has a re-designed hand crank for raising or lowering the mast and a positive 90-deg wheel lock for line drilling.—**Thor Power Tool Co., Aurora, Ill.**

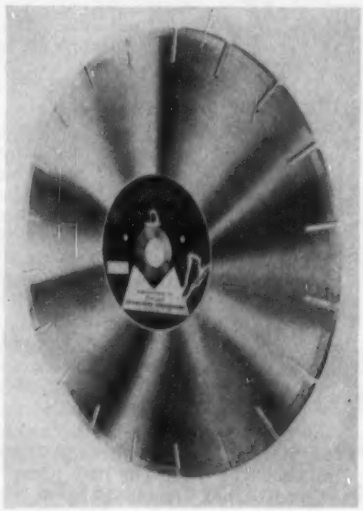


STARTING AIDS—The 24-v starting systems on the Caterpillar D6, D4, and D2 crawlers are now equipped with two ether starting aids and the tubing needed to inject vaporized ether into the air intake manifold. By using the ether starting aids in conjunction with the glow plugs that have been used on Cat electric starting systems for some time, it is possible to start without difficulty in temperatures as low as 10 deg. The ether starting aids are also available on the Nos. 955 and 933 Traxcavators.—**Caterpillar Tractor Co., Peoria, Ill.**

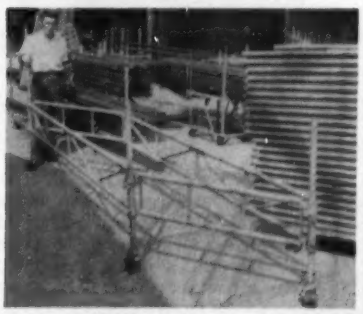


VARIABLE WEIGHT ROLLER—The new Ferguson 8 to 12-ton tandem roller comes with a choice of either gasoline or diesel six-cylinder engine, an Allison torque converter and a two-speed transmission with an 0-5½-mph range. Variable weight is obtained through water ballast

stored in a 200-gal tank. When fully ballasted, the 60-in. dia, 54-in. wide compaction roller exerts a pressure of 287 lb per in. of width. Rolls are constructed from high carbon steel plate with the edges rounded to prevent undue marking. The rugged frame is of one-piece steel. Timken ball and roller bearings are used throughout. — **Shovel Supply Co., 4900 Hines Blvd., Dallas, Tex.**

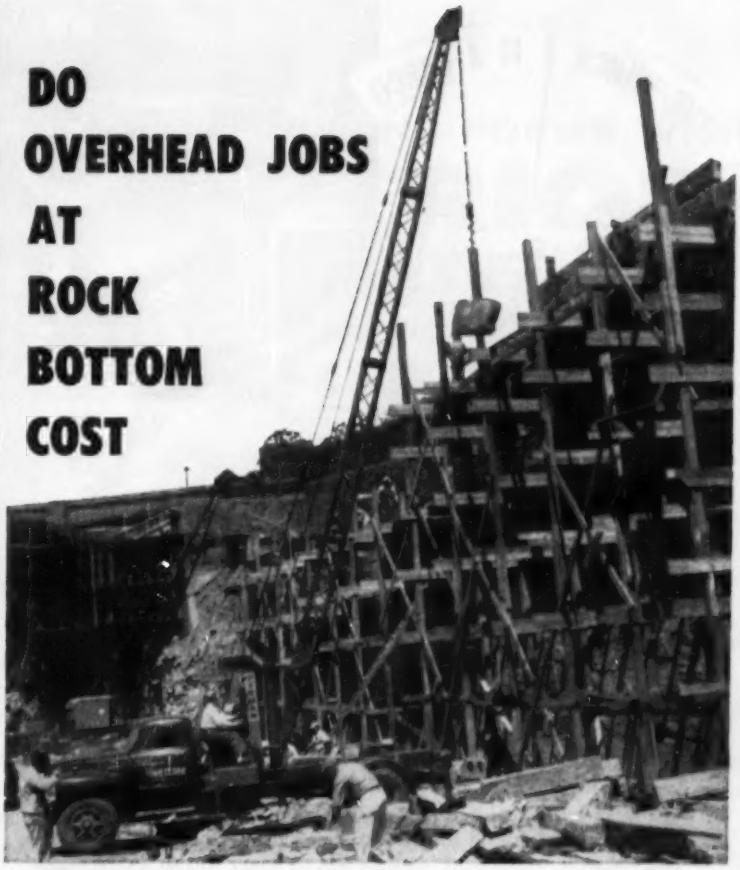


WET CUTTING—Cardinal's new diamond blade is unique in that each diamond bearing segment is individually molded to assure uniformity in the distribution of diamond content. Then the blade is hardened, tempered, and tensioned so that segments are guaranteed not to come off in normal use. This feature results in 33 1/3% longer life, although the blade costs 25% less than comparable blades, according to the manufacturer. The new blade, available in 14 and 16-in. sizes, is made for wet cutting use on any standard type of masonry saw.—**Cardinal Engineering Corp., Philadelphia 27, Pa.**



HINGED SCAFFOLD—The most important feature of the Lo-Boy rolling scaffold is that all four corner posts are hinged. Standing normally, the unit is 5 ft wide and 10 ft long. But by removing planks and pressing the sides together, it can

DO OVERHEAD JOBS AT ROCK BOTTOM COST



with the amazing

Pitman CRANE
MODEL 80

- Capacity Up to 4 Tons
- Boom Lengths to 59'
- 180° Power Swing
- Mounts on Conventional Trucks
- Boom Folds Like Carpenter's Rule
- Precision Boom and Loadline Control

With Pitman Crane, Model 80, you now can do scores of jobs that formerly required a crane costing thousands of dollars more. And, because you can move it to the job and set it up so quickly, Pitman Crane does many of these jobs much faster, much easier. Get all the facts NOW! Pitman Crane could save you thousands of dollars in one season alone.

Pitman MFG. CO.
300 West 79th Terrace
Kansas City, Mo.

Send me complete details on the new Pitman Crane, Model 80, along with name of nearest distributor.

Name _____

Company _____

Street _____

City _____ State _____

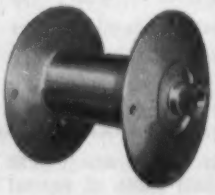
CARCO WINCH HELPS RESCUE 65-TON CRANE FROM CHICAGO RIVER

While working on a 15-degree slope, a 65-ton Bucyrus-Erie 51-B crane toppled into the Chicago River.

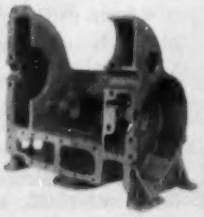
After careful investigation, States Improvement Company, the contractor, found that the easiest and cheapest way to rescue this valuable equipment from 21 feet of water was to winch it out.

Two lines fastened to deadman beams were run through snatch blocks and fastened by a diver to both front sides of the completely submerged crane. Most of the lateral pulling power was supplied by a Carco Model J winch on an Allis-Chalmers HD-21 tractor. Vertical lift was furnished by an Osgood crane and a sister 51-B. In six hours, the rescue was accomplished and the valuable B-E crane hauled to land without additional damage.

Emergency jobs of this kind demonstrate one important use of a Carco winch on construction projects. Others are heavy-duty towing, rescuing mired trucks and equipment, spotting and unloading freight cars, raising towers and poles, hoisting structural steel or timbers and other towing and hoisting jobs. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branch at Chicago, Illinois.



The Carco Model J winch is available with either Standard or High Capacity drum. The Standard drum (12" length) assures longer wire rope life. The High Capacity drum (16" length) has greater line capacity for utility service.

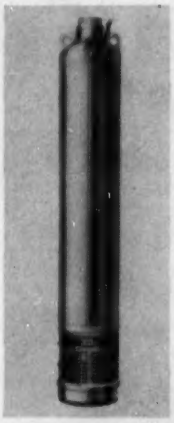


The one-piece Model J winch case is cast of patented Carcometal, a high strength alloy steel. It completely encloses all gears in a leak-proof oil reservoir and excludes water and dirt from the bearing races.

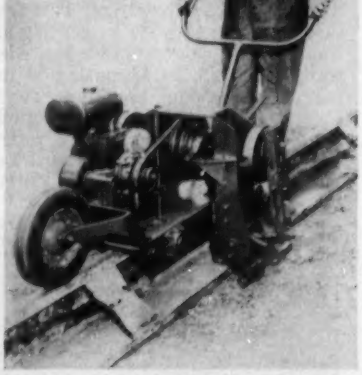
All Carco winches are built of the rugged materials needed to assure operating dependability. That's one reason why Carco makes more winches for more makes and models of industrial tractors than any other producer.

CARCO®

easily slip through a doorway. The basic unit is adjustable to any height up to 10 ft. Greater heights are obtained by placing the unit on top of a standard Superior Auto-Lock frame. Truss sections are interchangeable so that lengths longer than 10 ft are available.—**Superior Scaffold Co., 5624 Bankfield Ave., Culver City, Calif.**

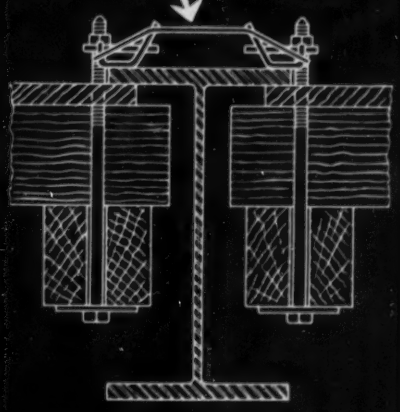


SUBMERSIBLE PUMP—Because its water intake is located at the bottom of the unit, the new Pleuger sump pump can pump down to a water level of 4 in. Like all Pleuger submersibles, it is powered with a water-lubricated motor located above the pump to provide protection against dirt and infiltration. Water is drawn directly into the first stage of the pump, by-passes the motor, and is delivered through a 2½-in. discharge hose. The new pump is offered with 5, 10, and 15-hp motors, with capacities up to 300 gal. per min and heads up to 140 ft. It is 8 in. in dia, and weighs from 130 to 175 lb.—**Pleuger Submersible Pumps, Inc., Lancaster, Pa.**



COMPACTS BENEATH FORMS—The Universal Formpacker is designed to quickly and effectively compact soil beneath concrete paving forms. The unit, which can be set up in a few minutes to fit all standard paving forms from 8x8in. to 12x12in., compacts soil under both sides of a form at the same time at a rate of approximately 25 fpm. The Formpacker, weighing 330 lb over all, is guided by a handlebar that can be adjusted to various heights. The tamping mechanism operates from a

Faster Adjustment from TOP of Deck



TOTAL SAFE LOAD ON BOTH COIL BOLTS IS 10,000 LBS., OR 5,000 LBS. PER BOLT

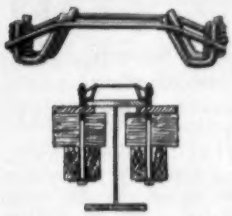
. . WHEN HANGING FORMS WITH

SUPERIOR PLATE HANGER FRAMES

With Superior Plate Hanger Frames the installation and necessary adjustment to bring the deck forms tight against the flange are from *above* the deck. Coil Bolts are passed through and secured from above with coil nuts. Bolts are easily removed without binding because, (1) nuts are square and will not turn; (2) embedment of the bolts in the concrete is at a minimum since the plate is only ½" above the flange.

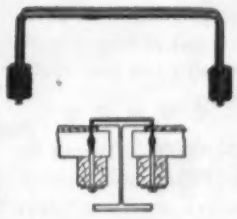
FOUR OTHER SUPERIOR WAYS TO HANG FORMS FROM STEEL BEAMS AND GIRDERS ON BRIDGE SUPERSTRUCTURES

STANDARD COIL HANGER FRAME



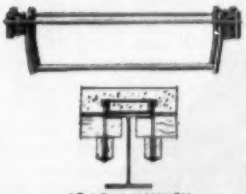
When hanging forms where specifications do not permit any hanger wire to be exposed after stripping, use Superior *Standard* Hanger Frames. Detail at left shows their use with double ledgers, ½" coil bolts, and flat washers. Total safe load on both bolts for Type 10M is 10,000 lbs., or 5,000 lbs. per bolt. For Type 6M, total safe load on both bolts is 6,000 lbs., or 3,000 lbs. per bolt.

COIL BEAM SADDLE



On jobs where hanger wires may be cut after stripping the forms, use Superior Coil Beam Saddles. The Coil Bolts allow for any variation in lumber and flange thickness and tightening the bolts pulls the forms tightly against the flanges. Forms are easily stripped. Safe load is 6,000 lbs. per saddle, or 3,000 lbs. for each ½" Coil Bolt. Coil Beam Saddles are also furnished for ¾" and 1" bolts.

SPECIAL HANGER FRAME

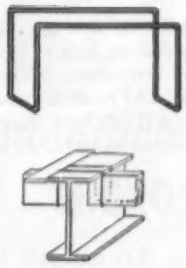


AT LOW HAUNCH

AT HIGH HAUNCH

The design of certain bridge superstructures allows for the permanent deflection of the beams or girders due to the pre-calculated dead load. This deflection is compensated by a concrete haunch of varying depth on the upper flange. Superior *Special* Coil Hanger Frames were developed to meet this field condition, at the same time avoiding any exposed hanger wire. The extent to which the ½" coil Bolts are threaded into the coils allows for these varying haunch depths from maximum to zero. (See detail). Total safe load per frame is 10,000 lbs., or 5,000 lbs. per ½" bolt.

WIRE BEAM SADDLE



Wire Beam Saddles are used to hang centering joists from structural steel beams when the beams are not fireproofed with concrete. On non-fireproofed structures the load is determined by the allowable spacing of centering joists rather than the capacity of the hanger. Available in three gauges and sizes as required. Will carry safely, total loads of 2,500 lbs. to 6,000 lbs. Layouts and estimates will be sent upon receipt of plans or quantities. No obligation.

WORKING PARTS (Bolts and washers) are returnable. Layouts and estimates for Superior Hangers are available without obligation.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

Powerful Payload Booster In ANY Material!

3-WAY PROFIT-MAKER! With hydraulic-tilt bulldozer in front and ATECO ripper behind, this tractor's ready to rip, push-load or bulldoze — instantly!

ATECO ROCK RIPPER

for Caterpillar D9, D8, D7 & D6 Tractors

GET EXTRA-YARDAGE SCRAPER LOADS FASTER... A pass or two with your ATECO Rock Ripper shatters and loosens packed earth, cemented gravel, hardpan, shale or rock. Your scrapers pick up heaped loads, with a shorter loading cycle that really boosts yardage and cuts costs!

SAVE SCRAPER DAMAGE AND DOWNTIME... There's far less strain on scrapers, less heavy push-loading, when you rip first. Saves you plenty in costly scraper repair and downtime!

TURN COSTLY "SHOOT & SHOVEL" JOBS INTO ECONOMICAL SCRAPER OPERATIONS... Rugged ATECO Rock Ripper's exclusive curved-shank shattering action rips rock and hard materials you'd formerly have to shoot, shatters 'em into easy-loading scraper condition, fast!

NO OTHER LIKE IT... Mounts on tractor, balances dozer weight for increased traction, easier handling. Works anywhere tractor can go. Lifts out of way instantly for bulldozing, push loading. Exclusive curved shanks and rock-splitting points shatter and lift hardest materials. Extra rugged; takes full power of tractor without damage to tractor or ripper!

Available now for Caterpillar D9, D8, D7 and D6 tractors. Thoroughly performance tested on hundreds of jobs by leading contractors. Why lose yardage, time and money with a "half-equipped" CAT?—Make yours a three-way profitmaker with an ATECO Rock Ripper now. See your Caterpillar dealer or write us today for literature, prices.

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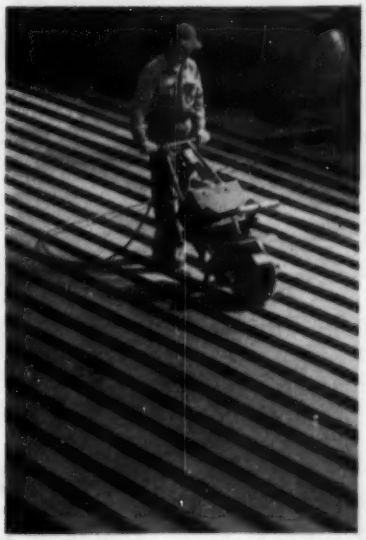
counter shaft driven by a traction shaft connected to a Kohler K9OR engine. In addition to driving the tamping mechanism, the engine, which develops 3.6 hp at 3600 rpm, also powers the unit forward. The unit is available in both left and right hand models, permiting operation of a machine on each side of the road simultaneously.—**Western Form and Iron Co., Minneapolis, Minn.**



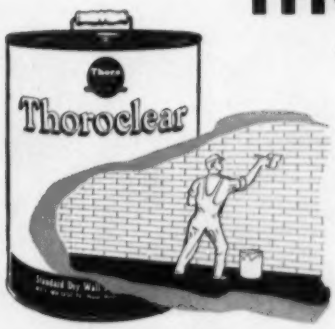
SCRAPER — A power-driven wire brush called the Speedlix is said to eliminate almost entirely the need for hand wire brushing of structural steel before painting. The unit, which is guided wheel-barrow fashion, is equipped with trollies on the top and bottom that permit adjustments to most surfaces. Supplied with the machine are eleven 1½-in. wide wire brushes that can be combined on the arbor to achieve any needed width. The machine is powered by a Westinghouse reversible 3-hp motor with sealed bearings. Built for rough treatment, the machine has sealed, self-aligned arbor bearings. It sells for $750, fob, Oakland, including eleven 15x1½-in. wire brushes and 25-ft extension cord. Extra brushes cost $11.25 each. —**Independent Iron Works, Inc., 8th & Pine Sts., Oakland 20, Calif.**

HEADS ARE FLUSHED—Three new studs, designed for jobs where stud heads should be practically flush with the surface, have been introduced by Remington Arms Co. for use with their powder-actuated tools. The studs have flat heads, ⅜ in. in dia and ⅛ in. thick. No extra washer or disk is required under the stud head. Thin shanks are said to assure less spalling. One stud is 1⅜ in. long and is used to fasten metal lath and other light sheet metal to concrete.

(Continued on next page)

The THORO System
of Masonry Protection

THOROCLEAR



Invisible Water Repellent

Ask your dealer about this powerful silicone water repellent developed by years of research by General Electric Company and now produced by us for your protection. *Ask for Circulars No. 30 and 31.*

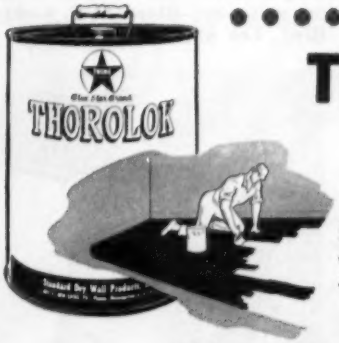
No change in color or texture of brick, limestone, sandstone, tile or stucco surfaces. Applied by brush or spray.

Keep water out of your masonry walls and protect interior plaster, paints and expensive furnishings.

THORITE

20 Minute Set Patching Compound

Repair those broken sills, steps, concrete floors, chimneys and other defective masonry! *Ask for circular No. 20.*



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NO. 100

Use it for your basement or factory floors. New, with special alkali resistant pigments. *Ask for Color Card 32-C.*

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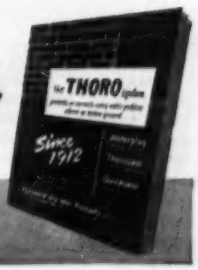
for all types of masonry protection!

GET OUR PICTORIALLY DESCRIBED LITERATURE "HOW TO DO IT"



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NEW EAGLE, PENNSYLVANIA

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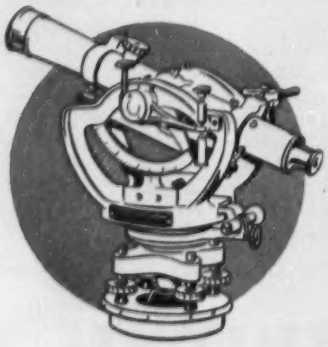

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Whatever you're looking for in a transit . . . look no further . . . WHITE'S got it . . . and in good measure! More than 40 years of know-how assure you of ACCURACY . . . to within 5 minutes on the vernier. SIMPLICITY . . . designed without unneeded frills or gadgets for fast adjustability and easy reading. DURABILITY . . . built for rough going, winter or summer and for years on end. PRICE . . . model 3000 complete with tripod for only $199.50* is a value you can't equal. Fill in coupon below for complete details and name of nearest dealer.

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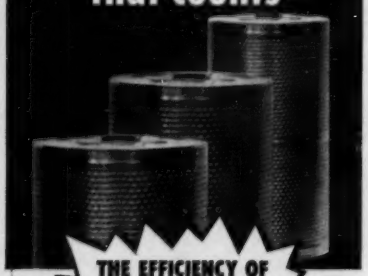
EQUIPMENT NEWS . . . Continued

Another stud, 2⅛ in. long, is ideal for furring strips to concrete or blocks, and the third stud, 3⅛ in. long, is designed to fasten 2x4's to concrete for shoring or form work. **—Remington Arms Co., Inc., Bridgeport, Conn.**

BARBER CHAIR?—No, it's the new Sky-Ride pneumatic seat base, designed to eliminate the bumps and jars that are the main causes of operator fatigue. The operator adjusts a knob to obtain any degree of air cushioning he desires. The unit consists of a base with a three-way valve for use with the air supply of the vehicle and a hand-operated pump. All but the moving parts are of lightweight aluminum. The unit weighs 28 lb., sells for $125 without the seat.**—Sky-Ride, 601 S. Rampart Blvd., Los Angeles 57, Calif.**

IMPROVED MOTO-BUG—Future models of the S-10 Moto-Bug, a three-wheel fork lift unit, will offer as optional equipment a double acting hydraulic valve that enables an operator to tilt the mast and raise loads with one hand. With the new attachment the mast can be tilted 10 deg toward the rear to assure bet-

it's what's **inside** that counts



THE EFFICIENCY OF

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PATENTED PROCESS

PACK

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DON'T BE MISLED BY PRICE ALONE!

There is no substitute for DIESELPAK'S Patented Filtering Process for H.D. Compounded oils AT ANY PRICE. The DIESELPAK cleans more oil faster—keeps it CLEAN longer—and gives more service and better engineered protection than any other filtering element. It PAYS to get the BEST!

✓ Protects engine

The DIESELPAK is designed to remove not only ABRASIVES but also CONTAMINANTS such as moisture, carbon, acid, etc., from oil, and is engineered to keep the **filtering media** and the **removed contaminants** from migrating back into engine.

✓ Extends periods between drains

The DIESELPAK collects and holds even the most finely dispersed contaminants without affecting or removing compound additives from the oil. A glance at the dip stick will show that the oil is CLEANER—symbol of better lubrication and longer oil life enjoyed only by Luber-finer users.

✓ Takes less oil

The DIESELPAK because of its engineered construction requires 2 to 4 quarts less oil than spongy substitute filter elements being offered for use in the Luber-finer housing. This is an additional saving enjoyed when using the DIESELPAK.

LUBER-FINER PACKS AVAILABLE:

1. REFINING PACK—Introduced to the public in 1935 for use with straight mineral oils, fuel oils, hydraulic oils, and inhibited industrial oils.

2. DIESELPAK—First made available in 1941, the DIESELPAK was primarily designed for use with H. D. detergent compounded oils and has also achieved outstanding results when used with fuel oils and straight mineral oils.

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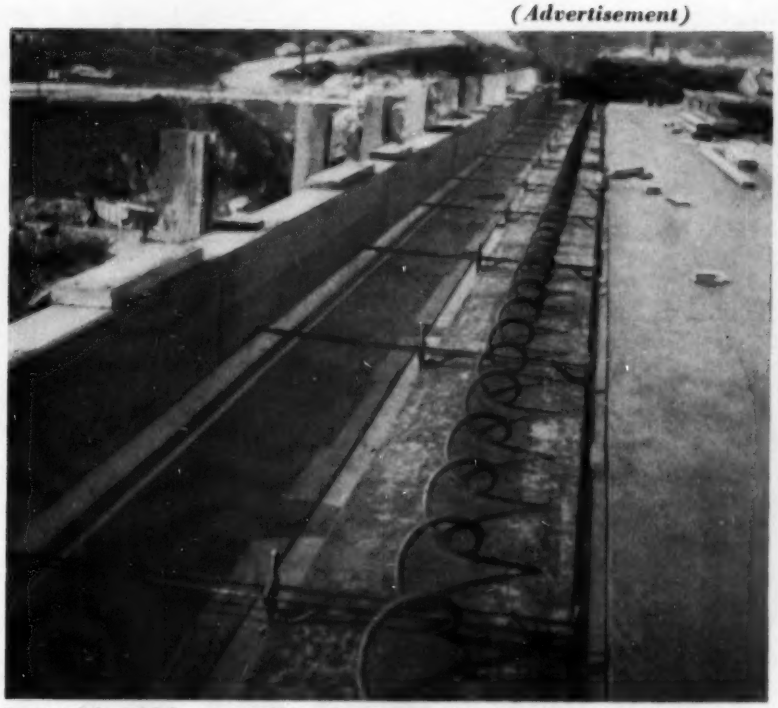


Support of these slab forms was quickly and easily accomplished from above with the Richmond Free Fit Hanger Frame-Ty. (Bridge above Ardsley over Saw Mill River Parkway—part of New York State Thruway construction; Raylin Construction Corp. and The Lynn Corporation, general contractors.)

Study of Slab Form Support Shows Savings with Richmond System

By what standards do contractors measure the effectiveness of flat slab form support methods? Which support systems are proving most helpful?

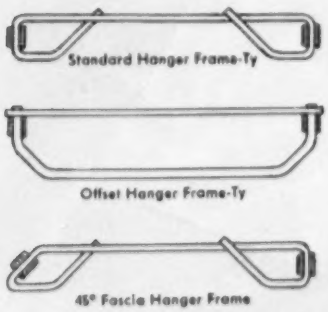
A survey brought out the following facts: *experienced contractors measure the effectiveness of flat slab form support systems in terms of three things: the degree of speed, safety and economy which they bring to a job.*

Loose wire is no longer used extensively because it meets none of the above three requirements. The use of wire beam saddles also is becoming less common. Although prefabricated to size, they are non-adjustable, and there is no positive means of tightening against the steel to prevent leakage of concrete.

Posting or "horses" are still used but this method is comparable to bracing wall forms. Prefabrication costs are high and erection is slow because of wedging and nailing usually required at the bottom flange of the beam. On high structures and deep beams this procedure is dangerous because the men have to reach down to the bottom flange to make the final tightening adjustment.

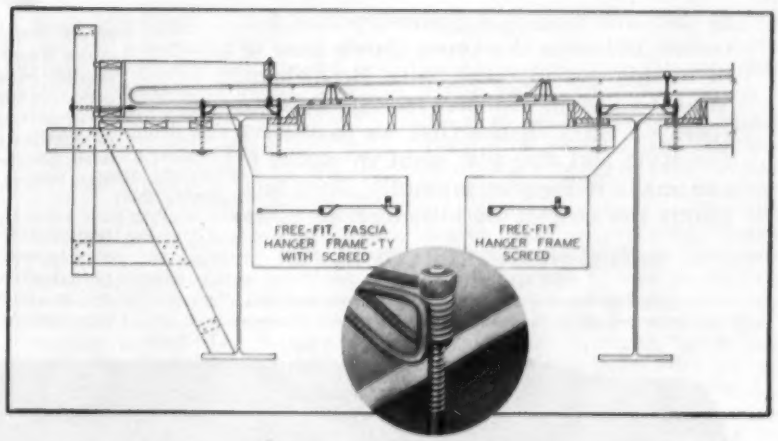
Richmond Hanger Frame-Tys are ideally suited to hang this type of construction. These units in Standard, Free Fit or Offset types (see illustrations) can all be adjusted for various slab heights and haunch conditions. Their established safe working loads enable the contractor to take full advantage of lumber strength and hanger capacity.

Richmond Standard and Offset Hanger Frame-Tys can be erected with a minimum of reaching under the *top* flange of the beams. Richmond Free Fit Hanger Frame-Tys have an additional advantage: all tightening is done from the top of the hanger by means of the nuts (see circle in large illustration), the Tylag passing freely thru an oversized coil.



Dual uses of these Richmond Hangers have become standard: Fascia Hanger Frame-Tys used not only to hang the forms but also tie in the Fascia Ty; a variation of this is the 45° Fascia Hanger Frame for light overhang, where one 45° bolt supports the fascia overhang and hangs the form; Hanger Frame Screeds combine support of the deck forms with an adjustable base for screeding or supporting curb forms.

Richmond Hanger Systems have reduced the contractor's overhead in time and materials, added safety to his operation and improved the quality of his work. The various types of Richmond Hanger Systems and their applications are detailed in the 1955 Richmond Catalogue. Write for your copy. Or, if you have specific concreting problems, Richmond's Technical Division or field men will be glad to advise you.



Write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y.

THREADED RODS. Bethlehem Threaded Rods are supplied with either cut threads or rolled threads. The cut-thread rods come plain or upset, in thread diameters up to and including 4½ in. Rolled-thread rods are furnished in thread diameters up to and including 1½ in. Both types come in lengths to meet job requirements.

NEED CONSTRUCTION FASTENERS?

If you are looking for construction fasteners, either in the types shown here or in others, get in touch with Bethlehem. We specialize in fasteners manufacture, so there's a good chance that we may have the style and size you want in stock, or can make it for you promptly. Just telephone the nearest Bethlehem sales office.

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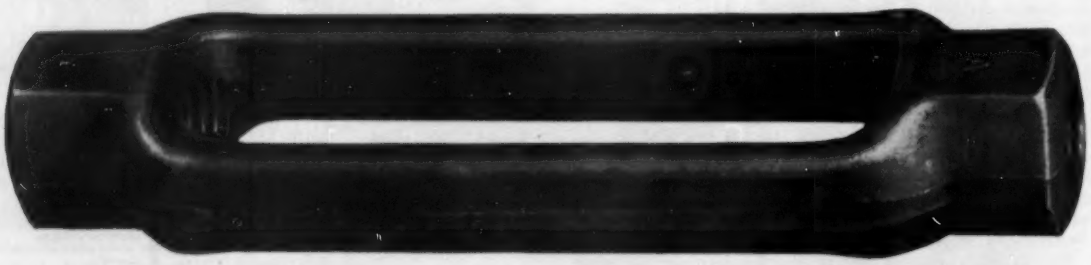
RIVETS. Bethlehem Rivets come in small and large styles. Small rivets are made in diameters 7/16 in. and smaller, in lengths 6 in. and shorter, and with button, cone, countersunk, pan and flat heads.

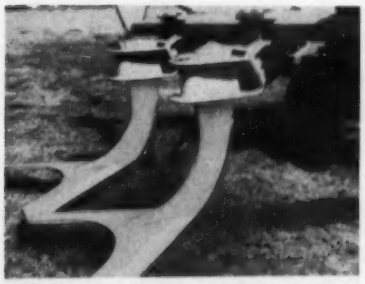
Large rivets come in sizes from ½ in. to 1¾ in., and in lengths 2 in. and longer, in steps of ¼ in. Furnished with countersunk, round-top countersunk, button, high-button, cone and pan heads. Also swell neck.

TURNBUCKLES. All diameters from ¾ in. to 2⅝ in., inclusive, with 6-in. openings between heads. Also furnished with 12-in. openings in sizes from ⅝ in. to 1½ in., inclusive. Hexagon ends. Right- or left-hand threads, with or without stub ends.

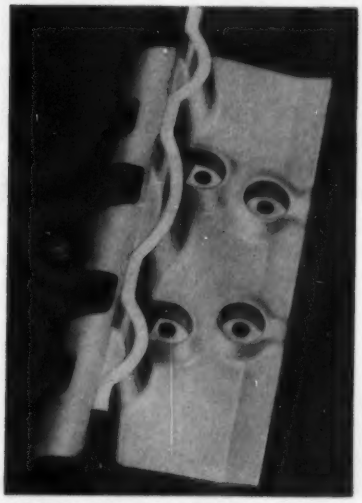


BETHLEHEM STEEL

ter load balance, or 2 deg forward to aid in picking up or releasing a load. The S-10 is powered by a standard 6-hp gas engine and travels at speeds up to 4½-mph both forward and reverse. It has a turning radius of only 61 in.—**Kwik-Mix Co., Port Washington, Wis.**



LAND CLEARING TOOL—A new heavy-duty land clearing tool called the TB-RC-7 root cutter will prove effective when heavy bush has to be cleared from building or dam sites. The root cutter is a V-shaped blade that cuts below the surface, effectively slicing off brush and small trees up to 4 in. in dia. The unit also serves to aerate the soil. Designed to operate with Caterpillar D7 tractors equipped with the No. 7 Fleco tool bar, the cutter can be used singly to cut 46 in. wide or it can be mounted in pairs to take a 92 in. cut. Depth adjustments range from 3 to 26 in. —**Fleco Corp., Jacksonville, Fla.**



INCREASED CONTACT—A new tract-type tractor grouser shoe is said to give as much as 15% more surface contact than conventional shoes without an increase in shoe width. Called the Gripper grouser shoe, it obtains its extra surface area by means of a grouser shaped in the form of several continuous curves instead of the straight-across design of conventional grouser shoes.

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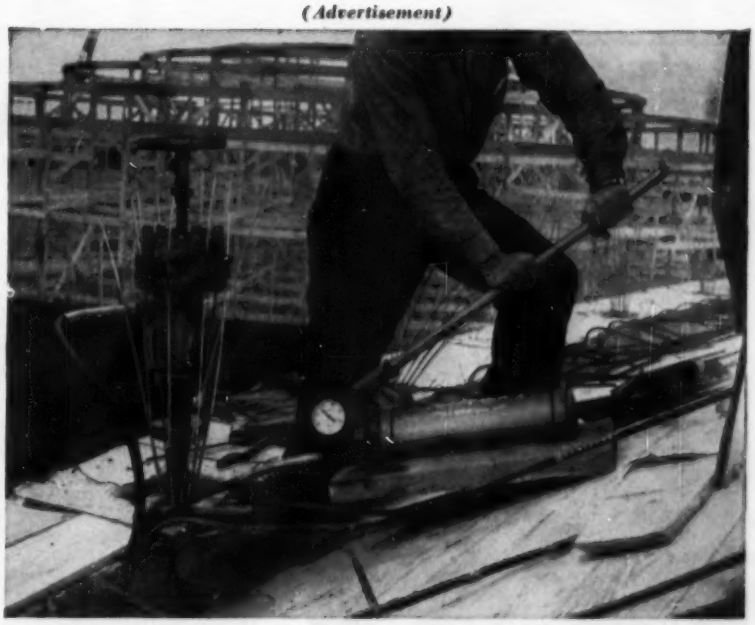


VERTICAL PRESTRESSING OF CONCRETE walls for a concrete water tank is done with a Re-Mo-Trol hydraulic jack. Six wires, which are secured in the bottom of the wall, are prestressed at one time.

Remote-Controlled Hydraulic Puller Perfected for Prestressing Concrete

Construction Men Cite Simplex Unit for Fast, Easy Use

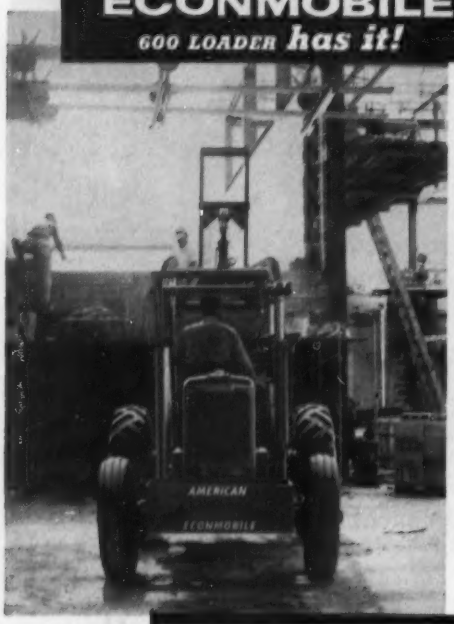
Tensioning cable, wires or rods for concrete prestressing is being done easily and quickly with Simplex hydraulic "center-hole" pullers, a number of construction men report. Because the unit is actually made up of two parts, a remotely controlled ram and a pump, the puller is more easily handled than conventional hydraulic jacks, they explain. The pump unit can be located nearby where it is most convenient for the operator. Many users install a pressure gauge, available as an accessory, between the pump and the puller to check the amount of prestressing applied. This Simplex Re-Mo-Trol puller is also useful on construction jobs as a powerful jack for lifting equipment and building sections, for aligning heavy beams, etc., and for testing the load bearing ability of the soil. Available in 7 models with capacities from 10 to 100 tons, it works in tight spots and enables workmen to stay at a safe distance while lifting, pulling or pushing.

Made by the world's largest manufacturer of industrial jacks, the Re-Mo-Trol is only one of many Simplex jacks that are useful in the construction industry. Others include the famous Jenny self-contained "center-hole" puller, the No. 310A Emergency Jack which lifts 15 tons on the cap, on the toe, on a cap shoe or at intermediate heights with a chain sling, and standard hydraulic, screw and ratchet lowering jacks. They are all described in General Catalog No. 53. Write for a free copy.

TEMPLETON, KENLY & CO.
2509 Gardner Road • Broadview, Illinois

THE SIMPLEX RE-MO-TROL for prestressing concrete is basically a powerful pump connected to a remotely controlled "center-hole" hydraulic ram by a high pressure hose.

clearance?
the ECONMOBILE 600 LOADER has it!



The ECONMOBILE is the only loader that can lift as high as 22' (with auxiliary tower) and still get under an 8' clearance. That means the ECONMOBILE can work both inside and outside a building, and can easily get under most aerial obstructions.

The ECONMOBILE also offers a long reach—up to 6' from wheel to heel of the fork; and it has a 90% use factor with a wide range of attachments.

The ECONMOBILE saves on every job. One contractor reported he cut labor costs by $368 a day.

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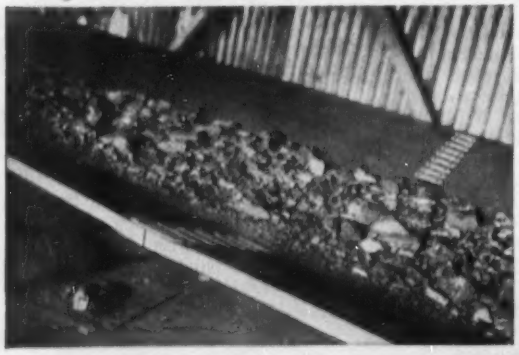
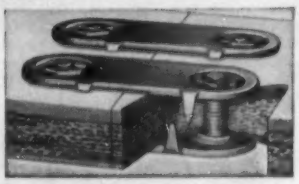
FLEXCO®

BELT FASTENERS and RIP PLATES



FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

★ FLEXCO Fasteners make tight butt joints of great strength and durability.
★ Trough naturally, operate smoothly through take-up pulleys.
★ Distribute pull or tension uniformly.
★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.
★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

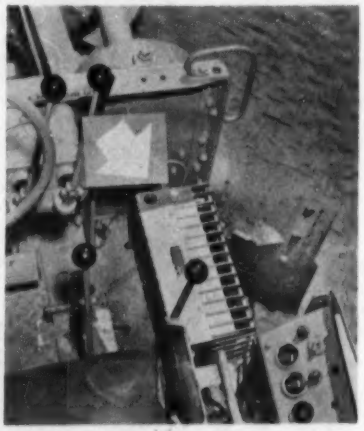
Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO., 4699 Lexington St., Chicago 44, Ill.

EQUIPMENT NEWS . . . Continued

The design is also said to reduce sideslip and fishtailing, and increase flotation without traction loss. Grousering bars are available from the manufacturer for rebuilding worn grousers without removing them. Constructed of manganese steel for toughness and durability, the shoes are available for replacement on Allis-Chalmers HD-19, HD-20 and HD-21 tractors in 24 and 26-in. widths; Caterpillar D7, D8 and D9 tractors in 22, 24, and 27-in. widths; and International's TD-24 in 22, 24, and 26-in. widths.—**Shunk Mfg. Co., Bucyrus, Ohio.**

50-TON COMPACTOR—The Chester 50T4 pneumatic compactor is equipped with four wheels with 18:00x25, 20-ply tires. Since each wheel is individually assembled to a ballast compartment, an even 25,000-lb load per tire is exerted. Compartments are hinged about a 12-in. dia pivot axle that permits oscillation up to 24 in. Fully ballasted, the compactor has a ground pressure of 1,250 per in. of rolling width. A goose neck-type heavy-duty draw bar allows the compactor to be hitched to any prime mover.—**Chester Products Co., Hamilton, Ohio.**

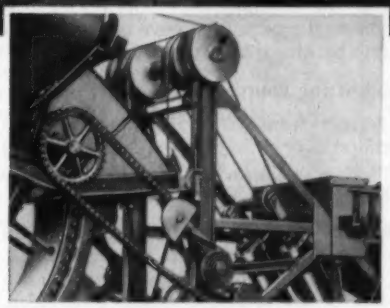


BIGGER HEATERS—Caterpillar motor graders can now be equipped with high-output hot-water heaters that more than double the capacity of the heaters formerly available. The new heaters are equipped with two individually controlled blower fans capable of providing an air output of 620 CFM. The heaters may be ordered to match either 6-v or 12-v electrical systems.—**Caterpillar Tractor Co., Peoria, Ill.**

NOW!

Instant Hydraulic Control of Conveyor Speed and Direction

Only **Gar Wood Buckeye** *has it!*



LIVE HYDRAULIC WHEEL HOIST, TOO!

Positions digging wheel faster, more accurately. Independent of all other operations. Operated from the seat by simple, one-hand controls.

Live hydraulics in new job-proved Buckeye ditchers make conveyor control far easier and faster than ever before. From the seat, the operator merely touches a lever for instant conveyor adjustment to handle any volume of spoil. Three discharge speeds in either direction meet every conveyor need. And, Gar Wood's exclusive hydraulic conveyor drive is completely independent of any other function. No complicated shifting . . . no need to stop digging wheel or crawlers. Maintenance is easier, too. No complicated drive transmission to adjust and repair.

All three of these new Gar Wood-Buckeye models—the 305, 307 and 308—have this and many other important features. For complete data and specifications, call your Gar Wood-Buckeye dealer or write direct to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

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Gar Wood Excavators | Gar Wood Tractor Equipment | Gar Wood Winches | Gar Wood-Buckeye Finegraders | Gar Wood-Buckeye Ditchers | Gar Wood-St. Paul Hoists & Bodies

America has homework to do!

THERE'S PROBABLY a lot about your town that makes you want to brag a bit about it.

But there's one thing you *can't* be proud of. And it's a shame you share with just about every other community in America.

The homes where far too many people live are a disgrace. Slums, semi-slums, housing blight are with you. Fixing them up is the homework to be done.

If your town is like most in the U. S., here's what the figures show: 1 out of every 10 homes are rock-bottom slums. Nearly one-half urgently need basic repairs.

But slums are something that is happening on the other side of town, you may say. The problem isn't mine.

Slums are YOUR homework

Distance is no barrier against the threat and cost of housing blight.

Your taxes go up because it takes more money for your town to fight the diseases and delinquency and poverty spawned in the slums. The security of your family goes down because the slum is the natural parent of crime.

Where your business comes in

Every firm has a responsibility toward the town where it's located. Part of it is to support community improvements as any other good citizen would.

Some slums are beyond repair. They must be torn down and a fresh start made. Others can be made to conform to accepted living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Civic and individual groups must have business backing . . . *your* firm's backing if they are to succeed.

Follow the course of Action!

A group of Americans from every walk of life has joined together in a non-profit organization to combat home and community deterioration, A.C.T.I.O.N., the American Council To Improve Our Neighborhoods.

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ACTION

American Council To Improve Our Neighborhoods

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

ASPHALT — "Asphalt Leads the Fight Against Beach Erosion," an 8-p booklet published by the Asphalt Institute, describes the installation of asphalt groins in Ocean City, Md. In addition, the bulletin gives the results of asphalt grouting studies for jetties, sea-walls, dikes and levees. The booklet is priced at $.45. **—The Asphalt Institute, Asphalt Institute Bldg., U. of Maryland, College Park, Md.**

BLACK TOP EQUIPMENT—Littleford's pressure distributors, supply tanks, sprayers, brooms, asphalt kettles, heater-planers, rollers and accessory tools are described in a revised 36-p catalog called "Black Top Road Maintenance and Construction Equipment."**—Littleford Bros., Inc., Box 83-465, East Pearl St., Cincinnati, Ohio.**

CONCRETE EQUIPMENT — Concrete vibrators, portable grinders, vibrating screeds and rotary trowels are illustrated in a new 16-p catalog. Complete specifications are given on all Stow's equipment, including four different sizes of Roto-Trowels ranging from 24 to 46-in. dia. In addition to specifications for vibrating screeds, directions are given for building your own vibrating screed beams.— **Stow Mfg. Co., 31 Shear St., Binghamton, N. Y.**

MASONRY—The fundamentals of watertight masonry, including discussions of mortar, masonry units, design, and workmanship, has been written by Walter C. Voss, professor emeritus of the Massachusetts Institute of Technology. The book, entitled "Exterior Masonry Construction," is 70 pp long and contains 36 photographic and schematic illustrations. Complimentary copies are available. **— National Lime Assn., Washington 5, D. C.**

ALLIS-CHALMERS DIRECTORY— "This is A-C From A to Z" is an alphabetical description of company products and descriptive literature available, as well as a brief history of Allis-Chalmers. It also lists the location of the firm's 17 plants, sales offices and tractor branches. The 24-p, 9x4-in. directory is listed as B6057.**—Allis-Chalmers Manufacturing Co., 840 S. 70th St., Milwaukee, Wis.**

(Continued on next page)

GOODALL *Waterproof*
CLOTHING • FOOTWEAR

For Reliable, Economical Head-to-Toe Protection

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Durable, full-cut garments, in rubber, oiled and latex constructions, for every kind of wet-weather work. Made of selected materials, with exacting craftsmanship, they are guaranteed waterproof, assuring complete protection from the elements. Reinforced where extra strength is needed, without imparing comfort and full freedom of movement. Available in a variety of styles in all sizes. No. 338 Coat is an old-time favorite—double back; corduroy-lined collar; 49" long.

SUITS— Style 80 Jacket with Style 81 Overall makes the ideal Shaft suit. Other jacket-and-overall suit combinations to meet every preference or job requirement.

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"Hardboiled" Safety Hats in fibreglass or aluminum. Light weight and comfortable, yet providing greatest possible head protection. Exceed highest established requirements for strength, heat and moisture resistance, and dielectric tests.

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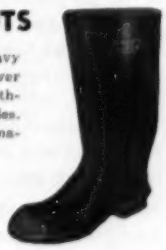
The "Toe-Saver" feature is also available on a variety of work shoes, and on our "Contractors" Mucker Boot.



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BASE COURSE DENSIFICATION at its *QUICKEST* and *BEST*

6 COMPACTING UNITS IN WORKHEAD for maximum productivity in straight-away work. Left: Compacting sand fill in a bridge approach . . . another phase of its wide range utility to paving contractors.

4 COMPACTING UNITS just fit this widening job-change required in only a few minutes.

3 COMPACTING UNITS in tandem and staggered, suits this job ideally — a quick and easy change.

1 COMPACTING UNIT fitted with operating handle and narrow base. Just right for the otherwise unreachable spots.

2 COMPACTING UNITS in twin hook-up — self-propelling. One man readily compacts up to 4000 sq. ft. per hr. in 10" layers.

Plus UNMATCHED ON-THE-JOB *ADAPTABILITY!*

For consolidating granular soil sub-bases and the base courses of sand, gravel, rock or slag in waterbound and penetration macadam construction, there is just nothing that compares with the Jackson Vibratory Multiple Compactor. It not only does the straight-away work in only half the time required by equipment of other types, but is so versatile, so easily adaptable on the job that it can be used to great advantage for widening projects of any width and getting into places other equipment can not touch. As may be noted in the illustrations, any number of compacting units may be used in the workhead (up to 6, which covers 13', 3") to exactly fit the job at hand. Units may be towed at the side or fitted with operating handles and used as individual, self-propelling compactors. Quickly interchangeable bases from 12" to 26" are also available for compacting in trenches, etc.

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LUDINGTON, MICHIGAN

PUBLICATIONS . . . Continued

DRAIN ENDS—A new illustrated bulletin tells how to make a wide variety of end finishes with corrugated metal pipe installation. Among those illustrated are square, beveled and skewed ends, riprap, sheeting, toewall, drop inlet, cantilevered ends, and spillways.—**Armco Drainage & Metal Products, Inc., Middletown, Ohio.**

HAMMER ACCESSORIES — Delaware Tool Steel Corp. offers a brochure on its new line of PipeDrivR accessory tools for use with standard pneumatic paving breaker hammers. Adaptable for driving pipe up to 2-in. dia., or for replacing old pipe with new, the pipe driver comes in a compact kit complete with adapters, connecting pins and driving points.—**Delaware Tool Steel Corp., Wilmington 99, Del.**

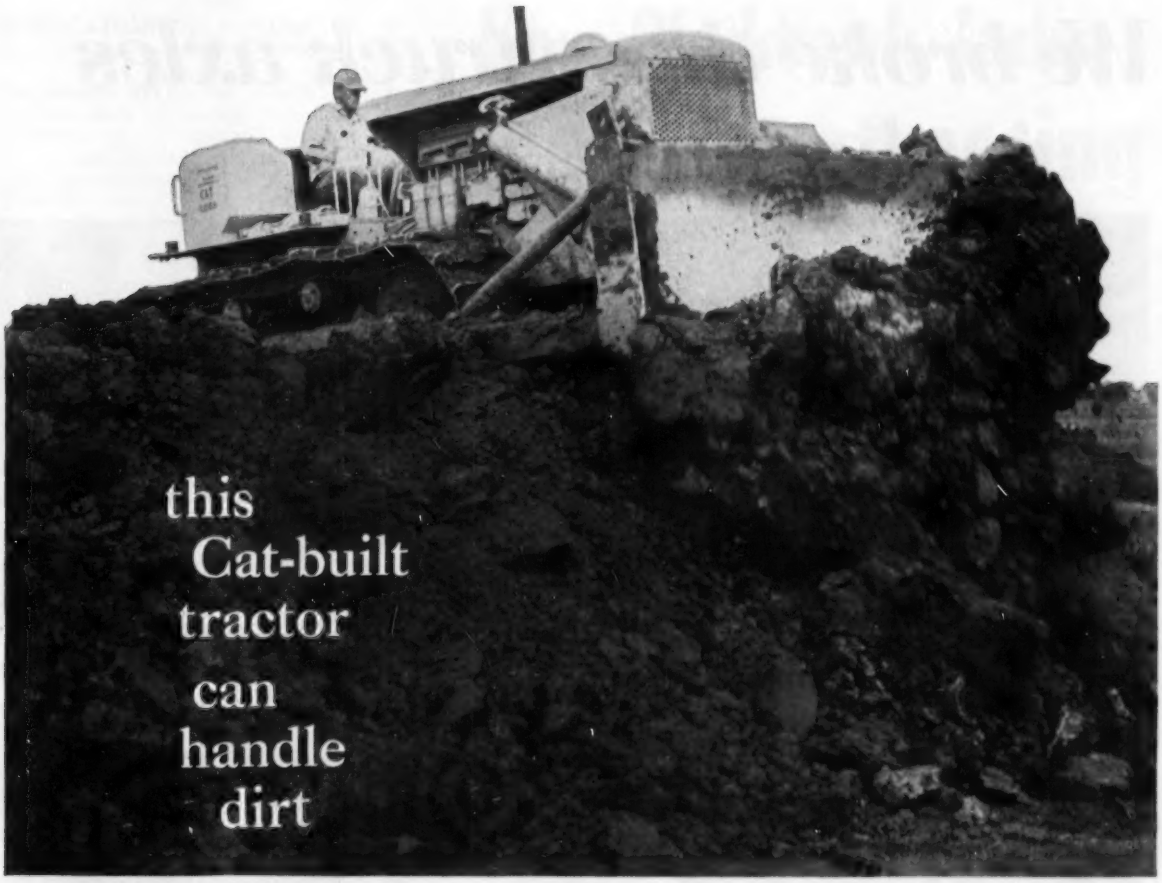
PIPE CATALOG—A 24-p catalog gives details of the construction, specifications, laying, tapping, maintenance and cost of Price Bros. pipe for waterlines. Price prestressed concrete cylinder pipe is made of a combination of materials, including steel cylinders, concrete core, and prestressed wire wrapping, all encased in a cement mortar coating.—**Price Bros. Co., Dayton 1, Ohio.**

SCAFFOLDS—Forty-five photos are used in a newly published pictorial review showing how modern scaffolds are used by construction trades. The entire March issue of Scaffolding Methods, the publication of the Patent Scaffolding Co., Inc., is given over to on-the-job illustrations showing cost-cutting applications of steel and aluminum scaffolds and wood and light metal ladders for construction, concrete shoring, and plant maintenance. — **Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N. Y.**

EXCAVATOR—A 4-p illustrated bulletin, describing the new self-propelled model CR-35 bantam, has been announced by the Schield Bantam Co. The bulletin contains detailed information including specifications and features of Bantam's new ⅜-yd, 6-ton crane-excavator. —**Schield Bantam Co., Waverly, Iowa.**

TRENCHLINER—Photographs and drawings are used in a new 16-p catalog to describe the sensitive hydraulic power system developed for the model 150 Trenchliner, a product of the Parsons Co. The new wheel-type Trenchliner has a maximum digging depth of 5¾ ft and six digging wheel cutting widths ranging from 16 to 26 in. Digging speeds range from 12 to 25 lineal ft per min. —**Parsons Co., Newton, Iowa.**

(Continued on page 267)



...with Caterpillar filter refills

Your Caterpillar dealer well knows the damage that dirt-laden oil can do to your tractor. Precision parts can be ruined in a matter of hours if unfiltered oil gets into the engine. That's why he always insists on giving you Caterpillar replacement filters. Built to meet the specific requirements of your engine by Purolator, they can handle all the volume your Cat-built tractor requires... they never let oil "by-pass" the filter... never let harmful abrasives enter the engine.

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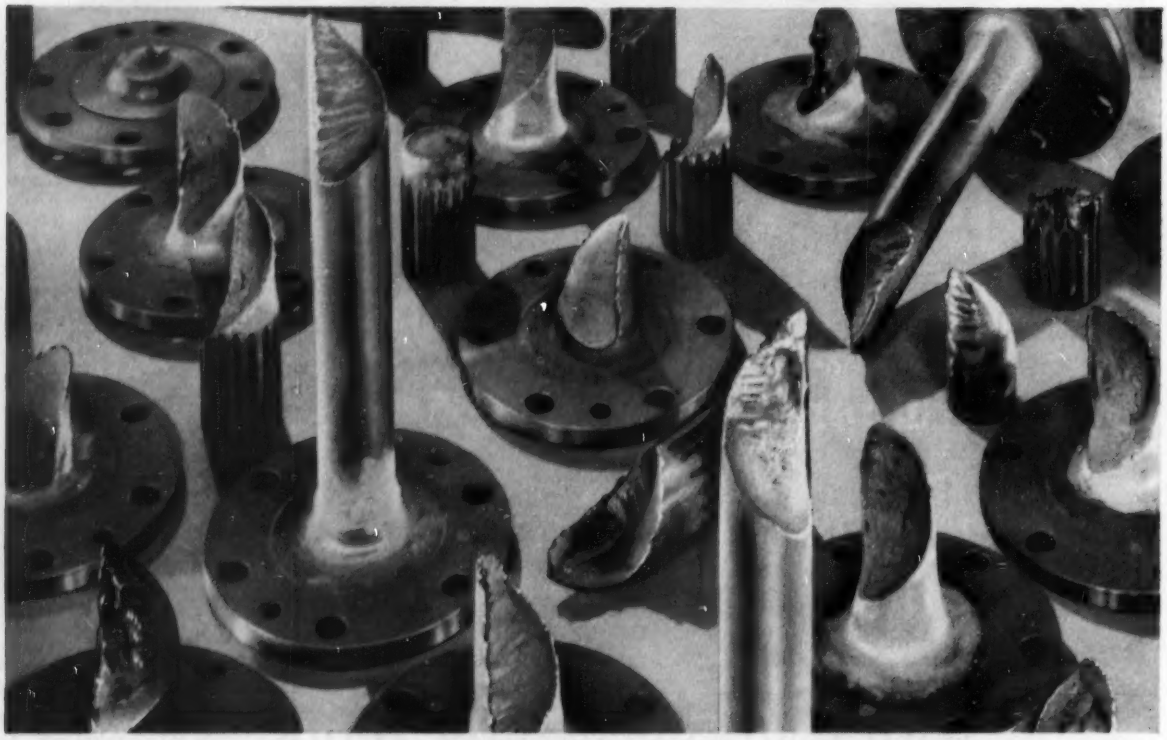
We broke these truck axles in the lab...



In the INTERNATIONAL Engineering Laboratory, axle shafts are tested by twisting them back and forth—hundreds of times—at stress points far beyond those of any normal truck operation. Axle shafts are approved for manufacture only when they withstand a prescribed high number of twists. Production line axle shafts must conform to the quality standards set up by this rigid test.

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Model S-184 LOADSTAR,® GVW 22,000 lbs. In the world's most complete line, there are trucks for every construction job, 4,200 lbs. to 90,000 lbs. GVW, with thousands of variations for exact job specialization.

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DIAMOND BITS—The results of several years of testing "oriented" diamond bits by Sprague & Henwood, Inc., is described in a 16-p bulletin. In cooperation with the U. S. Bureau of Mines, Sprague & Henwood initiated the practice of orienting drilling bort in bits. According to the manufacturer, on-the-job tests showed that the bit cost per foot drilled was reduced considerably by orientation. A complete description of the various types of orientated bits is included.—**Sprague & Henwood, Inc., Scranton 2, Pa.**

TRAILERS—A new catalog and a series of bulletins are now available from Talbert Trailers, Inc., covering its line of low bed, tilt and flat deck auxiliary trailers with capacities ranging from 10 to 100 tons. One section of the catalog shows how a choice of combinations of interchangeable trailer components can meet a variety of hauling needs.—**Talbert Trailers, Inc., 7950 W. 47th St., Lyons, Ill.**

TROWEL CATALOG—More than 1,100 tools used by masons, plasterers, and finishers are covered in the new Goldblatt catalog. These include over 50 tools introduced for the first time. The size of the annual catalog has been increased to 8½x11 in. to allow more room for illustrations. —**Goldblatt Tool Co., 1960 Goldblatt St., Kansas City, Mo.**

DEERE TRACTORS—A new 24-p booklet illustrates the complete line of John Deere industrial tractors, both wheel-type and crawlers, and includes descriptions of available attachments. Complete specifications, many on-the-job photographs, and testimonials are included. — **John Deere Industrial Div., Moline, Ill.**

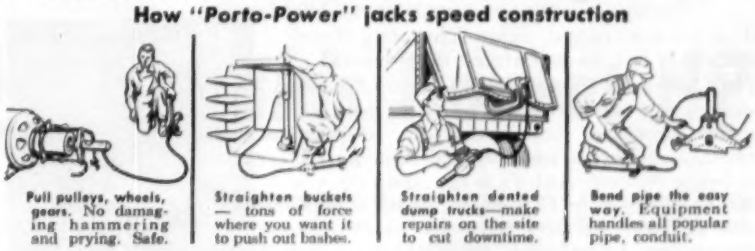
CRAWLERS—"The Crawler . . . Backbone of Construction" is a new 12-p booklet just published to illustrate how and where the American Tractor line of 30 to 60-hp Terra-Trac tractors fits in the construction picture. In addition to describing the TerraTrac line, the booklet also gives Bureau of Census reports on tractor sales in 1955, a breakdown of U. S. construction in all major classifications for 1955, and the anticipated volume for 1956.—**American Tractor Corp., Churubusco, Ind.**

VIBRATING SCREENS — A new bulletin, well illustrated with typical applications, covers the complete line of Telesmith vibrating screens. Telesmith manufactures a complete line of screens including heavy duty scalpers and two types of finishing screens in two-bearing and four-bearing models.—**Smith Engineering Works, Box 723, Milwaukee, Wis.**

How Blackhawk Jacks Speed Pre-stressing

100 TONS OF FORCE FROM "PORTO-POWER" remote control jacks are the practical answer for pre-stressing concrete beams. Above —two Blackhawk hydraulic pumps transmit oil under pressure to rams — each of which can exert 50 tons of jacking power. Using an "I" beam as a crosshead, the rams are tensioning the cables after the girder is in place. Other "Porto-Power" jack sizes include 4, 7, 10, 20-ton capacities.

How "Porto-Power" jacks speed construction

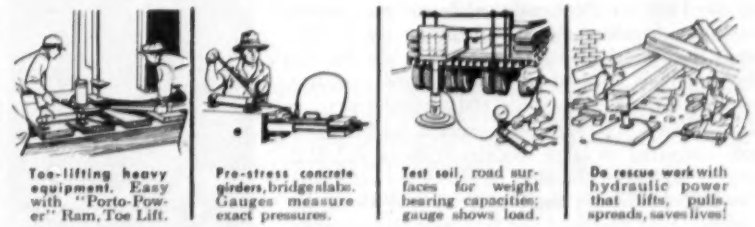


Pull pulleys, wheels, gears. No damaging hammering and prying. Safe.

Straighten buckets — tons of force where you want it to push out bashes.

Straighten dented dump trucks—make repairs on the site to cut downtime.

Bend pipe the easy way. Equipment handles all popular pipe, conduit.



Toe-lifting heavy equipment. Easy with "Porto-Power" Ram, Toe Lift.

Pre-stress concrete girders, bridge slabs. Gauges measure exact pressures.

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PREVENT COSTLY DOWNTIME — speed up construction in *hundreds* of ways! Above uses of Blackhawk "Porto-Power" are only a sampling. Maintenance is faster, easier . . . cutting downtime from hours to *minutes*. And only Blackhawk builds the *complete* line of hydraulic tools and attachments to answer needs for pushing, pulling, clamping, bending, spreading and pressing with tons of versatile power. See your Blackhawk construction equipment distributor *today*. Or write for free catalog H-201 — it's full of cost-cutting hydraulic power *ideas!*

BLACKHAWK MFG. CO., Dept. J-2346, Milwaukee 46, Wisconsin

BLACKHAWK®

World's Largest Manufacturer of HYDRAULIC TOOLS

how to cut costs on concrete finishing

Powerful, new STOW lightweight roto-trowel gives faster, smoother finishes!

Here is a new, rugged, lightweight rotary trowel that works fast, leaves surfaces really smooth!

The G-24 Roto-Trowel weighs only 69 lbs. and because it is only 24 inches wide, can be easily carried anywhere, through doorways or down stairs . . . finishes so smoothly that hand work is no longer required. And it's so easy to use . . . you can be an expert in 15 minutes. Floats and finishes driveways, terraces, cellar floors, sidewalks, and porches. Trowel blade tilt can be controlled by the knob on the handle *while the machine is running*. A safety clutch control on the handle stops the trowel blades from rotating the instant the handle is released. A sturdy guard ring lets you work right up to walls and around pipes.

The STOW G-24 Roto-Trowel is low in cost, too, compared to large models. It has a 2.2 HP engine, making it the most powerful trowel in the low-priced field. As one contractor said about the G-24, "This is one of the best buys I have ever made".

Send in this coupon, if you'd like more information. We'll send you a bulletin with on-the-job pictures, specifications, and prices. Write today.

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Please send G-24 Roto-Trowel bulletin showing on-the-job photos, specifications, prices.

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Continued from page 32

manufacturing and converting plant, at Antioch, Calif. for Crown Zellerbach Corp., 343 Sansome St., San Francisco, Calif. $12,000,000.

Becker Construction Co., 7701 W. Blue Mound Rd., Milwaukee, Wis. Excavation and foundations for Unit No. 4 power plant at Oak Creek, Milwaukee, for Wisconsin Electric Power Co., 231 W. Michigan St., Milwaukee, Wis. $19,500,000.

Babcock & Wilcox Co., 161 E. 42 St., New York, N.Y. Power Station to be known as Clinch River Plant, 450,000 kw, two 10-story boilers at Carbo, Va., for Appalachian Electric Power Co., 40 Franklin Rd., Roanoke, Va. $55,000,000.

Allis-Chalmers Mfg. Co., 864 S. 70 St., Milwaukee 1, Wis. A 305,000-kw turbine generator at Fisk Station, Cermak Rd., Chicago, Ill. for Commonwealth Edison Co., 72 W. Adams St., Chicago 90, Ill. $45,000,000.

General Electric Co., River Rd., Schenectady, N.Y. A 156,250-kw generating unit at No. 3 Plant, completion 1956. $15,000,000. A 190,000-kw capacity generating unit and addition at Plant No. 3, completion 1958. $25,000,000. Both at Gorgas, Ala., for Alabama Power Co., 600 N. 18 St., Birmingham, Ala.

Dickman-Pickens-Bond Construction Co., Gazette Bldg., Little Rock, Ark. Sausage casings manufacturing plant at Loudon, Tenn., for Visking Corp., Fruit Ridge Ave. and Ft. Harrison Rd., Terre Haute, Ind. $5,400,000.

Catalytic Construction Co., 1528 Walnut St., Philadelphia, Pa. Design and construct plastics plant in Washington, W. Va. for the Marbon Chemical Div., Borg-Warner Corp., 310 S. Michigan Ave., Chicago. $10,000,000.

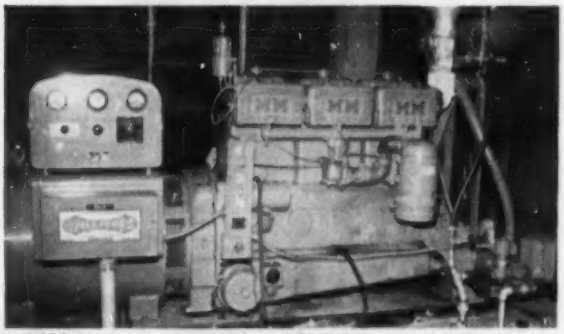
The Austin Co., 16112 Euclid Ave., Cleveland, Ohio. Design and construct 558,000-sq ft plant and office building at Renton, Wash., for Boeing Airplane Co., 7755 E. Marginal Way, Seattle, Wash.

Sumner Sollitt Construction Co., 307 N. Michigan Ave., Chicago, Ill. Phase II, Francis Cabrini Extension, including two 7-story apartments, three 10-story apartments, two 19-story apartments, 1-story community building, Chicago, Ill. for the Chicago Housing Authority, 608 S. Dearborn St., Chicago 5, Ill. $10,617,000.

Hallmac Construction Co., 2261 W. Holcombe St., Houton, Tex. Natural gas distribution system in and near Spokane, Wash. for the Spokane Gas & Fuel Co., N. 25 Monroe St., Spokane, Wash. $6,500,000.

High-Production Equipment deserves Honest HP

MM 283-4A gasoline engine powering a Lindig Soil Shredder. Compact, easily installed MM engines provide a permanent, integral power source for a wide range of portable equipment.

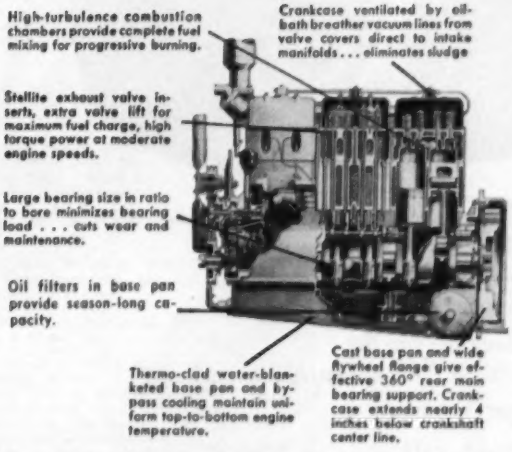


MM 800-6A natural gas engine drives a 75 KW direct-connected generator. Equipped with automatic remote control, this unattended stationary plant supplies regular or standby power.

MM 605-6A gasoline engine supplies low-cost power for this big-capacity American stationary hoist. High torque MM power units respond with steady rpm to intermittent or changing loads.

MM 403-4A gasoline engine mounted on a Warner-Swasey Gradall. Choice of gasoline, diesel, LP gas, natural gas or distillate fuel equipment offers continuous-duty MM power at lowest fuel costs.

Here's how MM builds Honest HP


High-turbulence combustion chambers provide complete fuel mixing for progressive burning.
Crankcase ventilated by oil-bath breather vacuum lines from valve covers direct to intake manifolds . . . eliminates sludge
Stellite exhaust valve inserts, extra valve lift for maximum fuel charge, high torque power at moderate engine speeds.
Large bearing size in ratio to bore minimizes bearing load . . . cuts wear and maintenance.
Oil filters in base pan provide season-long capacity.
Thermo-clad water-blanketed base pan and by-pass cooling maintain uniform top-to-bottom engine temperature.
Cast base pan and wide flywheel flange give effective 360° rear main bearing support. Crankcase extends nearly 4 inches below crankshaft center line.

MM ENGINE SIZES

4 Cylinder Carbureted Models*		6 Cylinder Carbureted Models	
MODEL 206A-4A	3⅛" x 5"	MODEL 425-6A	4⅛" x 5"
MODEL 283-4A	4⅛" x 5"	MODEL 605-6A	4⅝" x 6"
MODEL 403-4A	4⅝" x 6"	MODEL 800-6A	5⅛" x 6"

*Engineered for gasoline, distillate, natural or LP gas.

4 Cylinder Diesel Models		6 Cylinder Diesel Models	
MODEL D-283-4A	4⅛" x 5"	MODEL D-425-6A	4⅛" x 5"
		MODEL D-605-6A	4⅝" x 6"

Honest horsepower is horsepower developed at operating speeds that are practical for heavy continuous duty. That is why Minneapolis-Moline engines are designed to develop maximum torque at around 1000 rpm and are power rated at from 1200 to 1400 rpm. Deep-pocket, high-turbulence combustion chambers for progressive fuel burning and prolonged pressure combined with large displacement and high compression ratios enable MM engines to deliver work-type power at usable speeds. Where special installations require higher rpm with rapid acceleration, MM engines can be furnished with aluminum pistons.

MM engines are stocked in various fuel models and standard equipment bundles for quick delivery. You can buy bare engines, engines with radiator, fan and power take-off, or complete enclosed units. Modification of standard units on separate production runs to meet special requirements are part of the flexible MM operation that saves you time and money.

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INDUSTRIAL DIVISION
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MIL-CARB* Carburized WASHERS

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Used Exclusively on Steel Framing of New Caterpillar Tractor Plant

In the construction of the Caterpillar Tractor Company's new, modern plant at Decatur, Ill., (Caterpillar's sixth U. S. Plant) the Mississippi Valley Steel Co., of Decatur, specified High Strength Steel Bolts and MIL-CARB Washers exclusively for this important contract... **supplied by GARY SCREW AND BOLT DIVISION, Pittsburgh Screw and Bolt Corporation, Gary, Ind.**

This installation is typical of the rapidly growing recognition among structural engineers and contractors of the superior value of high strength bolted steel construction.

MIL-CARB Washers were a logical choice for this important bolted steel structure, as in many other major projects, because of the inherent characteristics of the steel and heat treatment employed in the fabrication of these washers. Prime Carburizing Quality Special Soundness Steel is used to insure uniform quality control — always equal to the rigid specifications for this form of steel assembly (ASTM Designation A325, applying to bolts, nuts and washers).

Both nuts and washers must meet a proof load equivalent to the ultimate load of the bolts and it is on this basis that MIL-CARB Carburized Washers are today winning dominant preference in the structural steel building field.

It is axiomatic that no bolt assembly is any better than its washers. And it is because MIL-CARB Washers overcome inherent weaknesses often present in heat-treated washers fabricated from steel of questionable quality that it pays to specify:

MIL-CARB Carburized Washers for uniformly sound construction.

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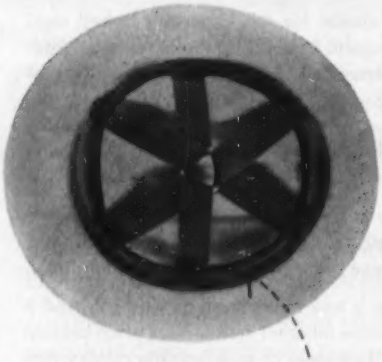
PROVEN BY THE REBOUND!

These Bullard engineering and sales research men are studying not only the impact, but also the rebound of this eight pound ball. Rebound action is the extra safety margin in Bullard safety hats and caps. Their scientifically designed three-ribbed crown not only resists impact but deflects heavy falling objects. This is one of the reasons why Bullard fiber glass hats and caps surpass all necessary industrial tests.

Greater protection plus style, comfort and color make Bullard head protection the best and longest lasting buy in safety hats and caps. Chin straps, winterliners and face shields are available for all styles of Bullard safety hats and caps.



Universal size—replaceable headband

Three-ribbed crown construction

Choice of permanent molded-in colors to identify company or trade. Aluminum hats and caps available also in variety of colors.

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E. D. Bullard Company, 275 Eighth St., San Francisco

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Scientists, too—by the modern world we live in. Don't let your youngsters miss future career opportunities by hasty choices. For instance, see that they include enough math and science courses in high school so careers in engineering, science, chemistry and other professions will remain open to them.

Write for the *free* folder "After High School What?" c/o Box 40, Mid-Town Station, New York 18, N.Y.

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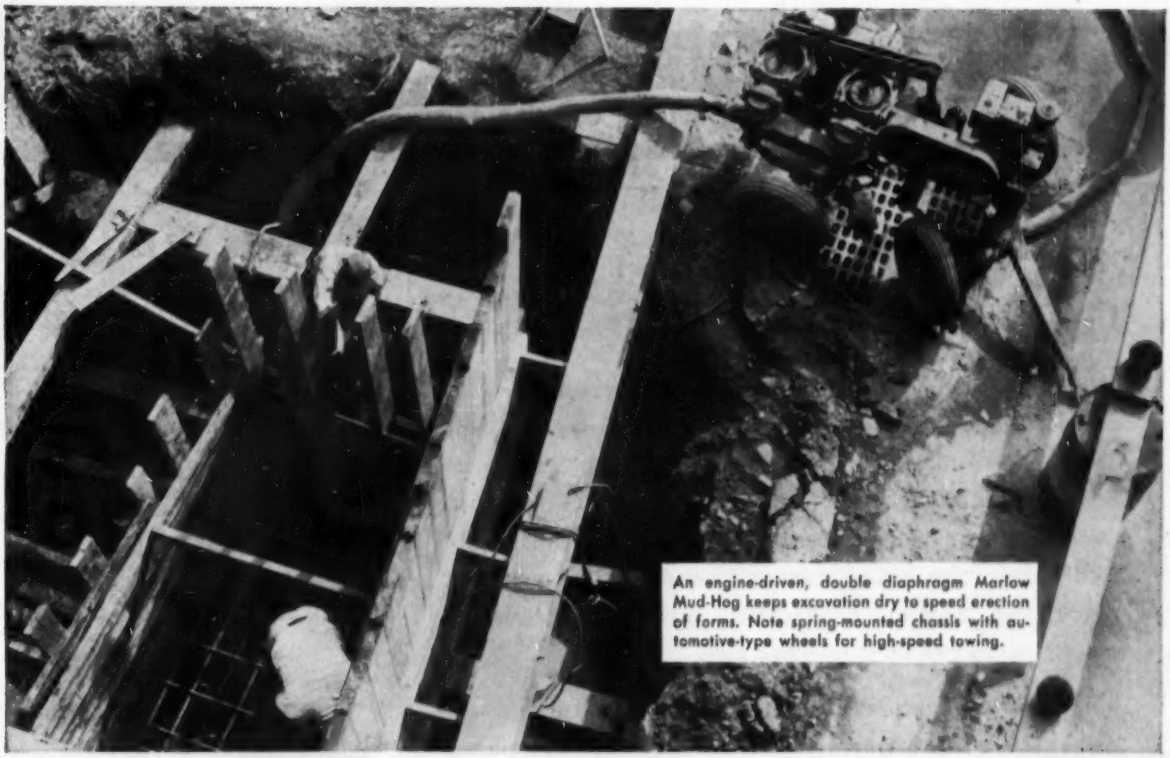
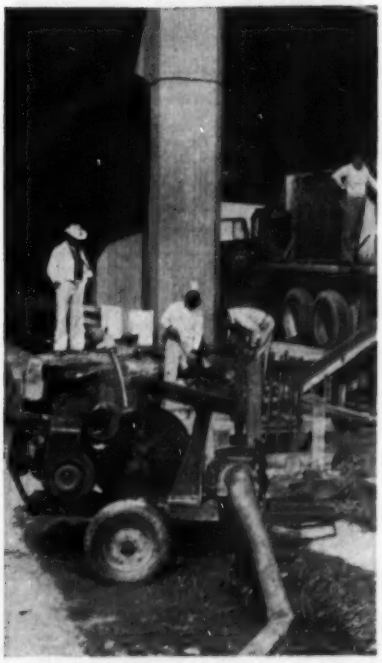


An engine-driven, double diaphragm Marlow Mud-Hog keeps excavation dry to speed erection of forms. Note spring-mounted chassis with automotive-type wheels for high-speed towing.

"Jersey Meadow" Job Poses Pumping Problem

Marlow Mud-Hogs Hold Heavy Seepage on Footing Excavations



A single diaphragm Marlow Mud-Hog pumps water from excavation as pour is started. Pump constantly re-primes itself as water level drops below suction line then rises again.

The Union Building and Construction Corp., Passaic, N. J., is widening five miles of the New Jersey Turnpike between Secaucus and Ridgefield Park. This stretch runs through the "Jersey Meadows," a vast tidal swamp. In adding 14-foot lanes to each side, Union must also widen two overpasses and three stream bridges to handle the traffic now using the turnpike.

Excavations for the pile footings that support these overpass piers have to be made in ground where the surface is only inches above the tidal level. To handle the constant water-table seepage, Union uses Marlow Mud-Hogs because of their ability to handle muddy, debris-laden water without clogging. John De Leeuw, Project Manager, said, "Not once has the job been held up because of pump failure, *despite a 24-hour pumping schedule since April 1955!*"

Marlow Mud-Hogs are built to take the rough and rugged use on tough pumping jobs. They prime automatically and can pass surprising quantities of mud, sand, stones, and trash without damage. If you have a job that calls for tough pumping, it will pay to use Marlow Mud-Hogs. For complete information on rugged, dependable mud-hogs, A.G.C. rated self-priming centrifugal pumps and the name of your Marlow dealer, write Marlow Pumps, Midland Park, New Jersey. No obligation.

Marlow PUMPS

MARLOW PUMPS

Division of Bell & Gossett Company

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CAREERS THROUGH MATH and SCIENCE

Parents . . . do you want to help your children choose their careers wisely? Then encourage them to take enough math and science in high school to qualify for *any* college courses.

Most professions now require training in these subjects. To work toward a career as an engineer or scientist a good preparation in math and science is essential.

Remember—America needs engineers now and will for years to come.

Write for the free folder "After High School What?" c/o Box 40, Mid-Town Station, New York 18, N.Y.

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STRONGEST FASTENATION

at Hollywood and Vine...

A dozen floors above the street, in America's new Tower of Music, this workman anchors steel channel as easily as squeezing a trigger—driving fasteners straight, deep and powerfully into solid concrete with the RAMSET® DUO-JOBMASTER.

Complete flexibility with DUO-JOBMASTER

Both ¼" and ⅜" fasteners are set with the same tool, the new RAMSET DUO-JOBMASTER. It's the famous RAMSET tool with two interchangeable barrels—to handle *every* fastening job with any style or length fastener.

THE CAPITOL TOWER, spectacular new home of hi-fi Capitol records, dominates the heart of Hollywood, California.

First circular office building in the world, it was designed by architect Welton Becket; contractor is C. L. Peck. The $2 million structure is 13 stories high, acoustically engineered for minimum sound disturbance; has underground reverberation chambers with foot-thick concrete walls buried 25 feet into the earth.

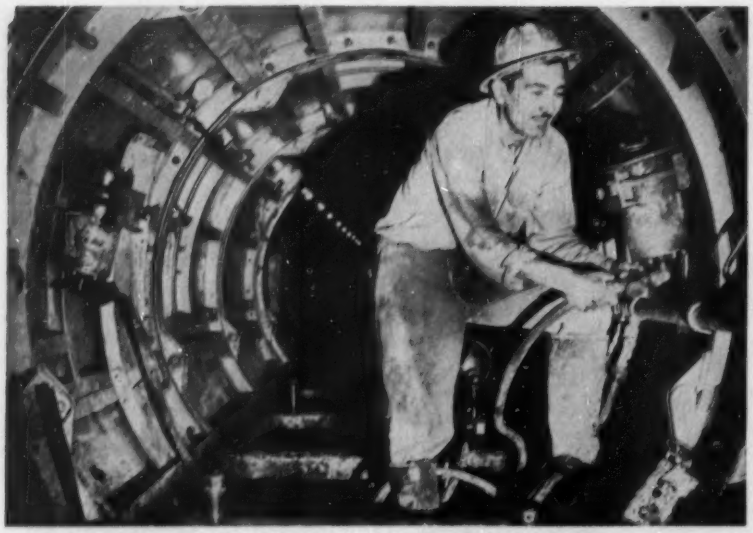
NEED A KILN GUN?

Designed to dislodge clinker rings from rotary kilns, Western's Kiln Gun (now sold by Ramset) removes all types of stubborn, inaccessible obstacles. Write for complete details.

No matter what the construction problem, if it requires fastening to steel or concrete, RAMSET will do it better, faster, cheaper. Ask for new free catalog, just ready for you.

Ramset Fastening System
WINCHESTER-WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION

12103-D BEREA ROAD • CLEVELAND 11, OHIO



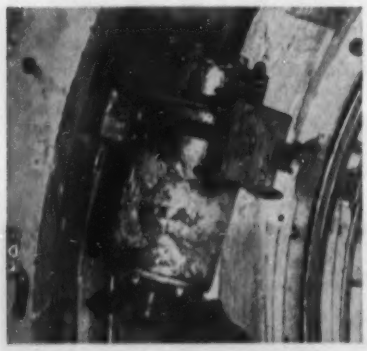
WORKER OPERATES one of the two Viber external form vibrators used on 2.9 mile sewer tunnel job. Vibrators are clamped to form and moved forward as concrete slope advances.

Two Movable External Vibrators Consolidate Concrete in La Cienega And San Fernando Relief Sewer

MAJOR PROBLEM of congested sewers in Los Angeles' heavily populated San Fernando Valley is being alleviated by a 2.9 mile long sewer tunnel bored through the Hollywood Hills.

The La Cienega and San Fernando relief sewer tunnel was holed through in horseshoe shape with a minimum diameter of 7 ft. 9 in. During lining, it was made circular with a 6 ft. diameter. Kemper Construction Company, Los Angeles, headed lining operations.

The Kemper crew prepared approximately 135 cubic yards of concrete daily at a batch plant at the tunnel's entrance and hauled it by 24-gauge train to work site.



VIBER MODEL PX high speed pneumatic vibrator shown mounted on form in sewer tunnel. Model PX is used widely in tunnel lining operations.

Once concrete was discharged on top of T-Lock lining forms and flow commenced around full-circle forms, two external Viber Model PX high speed pneumatic vibrators were used to consolidate it rapidly and completely. Vibrators were clamped to the form and moved forward as concrete slope advanced. A Viber internal vibrator was sometimes used in conjunction with the external vibrators.

Highly experienced in tunnel lining, Kemper Construction Company designed the vibrator mounting clamp to fit the needs of this job. Clamp hangs from angle rail which extends length of form section. As slope advances, clamp may be released to switch vibrator to new position along rail without lifting it from rail.

Viber Model PX vibrators are used widely in tunnel lining operations. They are also used effectively in manufacturing concrete pipe and other precast members wherever reusable steel forms are set up on a production basis.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 8-B, 726 S. Flower Street, Burbank, Calif.

VIBER

CONCRETE VIBRATORS SINCE 1931

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BUILT FOR ROCK-HARD ROAD WORK

The Allis-Chalmers HD-21 Crawler Tractor is a Natural for Tough Jobs

Chiseling roads through rock demands "something extra" in crawler tractor performance and durability, yet it's the kind of job any contractor's tractor may be required to do.

Conditions like this call for an Allis-Chalmers HD-21. Its 204-hp Allis-Chalmers engine is noted for its ability to perform with a minimum loss of efficiency even after thousands of hours of operation. Torque converter drive multiplies torque up to 4½ times . . . develops 41,500 lb drawbar pull at low speeds . . . cushions the entire power train against load shocks.

New Tru-Dimension tracks bring a new high in track durability. Thousand-hour lubrication intervals save maintenance time. Positive seals protect idler, support roller and truck wheel bearings from abrasive wear as no other seals can.

Ask your Allis-Chalmers dealer to show you the many other features that make the HD-21 a natural for rock-hard assignments.

HD-21
204
net engine hp
44,000 lb
torque converter drive

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Methods Memo . . .

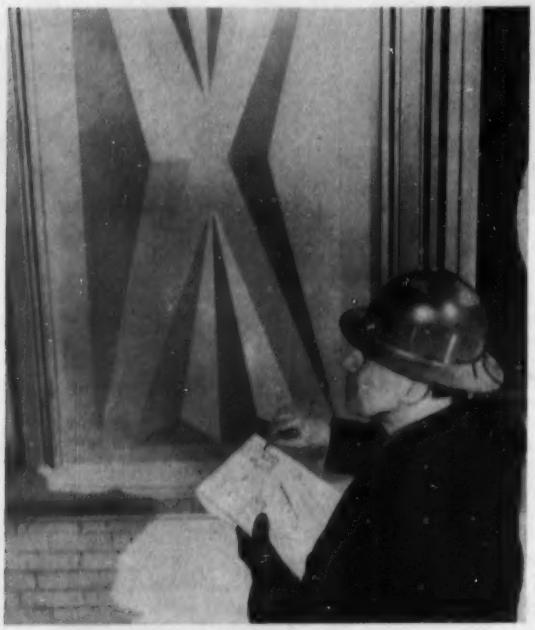
Amphibious Construction

Here's a job for the books. It involves placing 32,000,000 yd of fill to form a solid earth and rock embankment across Great Salt Lake in Utah. Morrison-Knudsen Co., Inc., Boise, Ida., has a $49 million contract for the job.

The embankment will replace a 12-mi long wood trestle which now carries Southern Pacific Railroad trains across the lake. When it is complete, tracks will be 15 ft above high water level.

Morrison-Knudsen is bringing a special dredge from Alaska to suck up 15,000,000 yd of muck, leaving a solid salt-bed base for the fill. It will use 10 barges—six of 2,000-yd and four of 1,000-yd capacity—towed by a small fleet of specially built tugboats to place the fill. A 2½-mi conveyor belt with a capacity of 3,500 tons an hour will deliver fill to the barges.

A series of 20-ft dia concrete culverts in the embankment will permit small boats to pass through it.



Stainless Steel Necktie

Bronzini, Ltd., a necktie manufacturer, has produced a "cravat" patterned on the design of the stainless steel panels used in construction of the Socony-Mobil Building in New York City. The picture shows W. D. Blackwell, president of Bronzini, sketching a panel.

Bronzini, we are told, often has used the architecture of ancient civilizations for design sources, but this is the first time a modern building has furnished inspiration.

No Dam Builders Wanted

This strange looking contraption is a beaver barrier. It's a California invention designed to make things difficult for a particularly busy beaver who insists on converting a highway culvert into a dam by plugging the end of the 36-in. dia pipe.

The beaver got to work within days after the culvert was completed. A maintenance crew of the Division of Highways worked all day to clear the plugged pipe. When they returned next day to finish the job, the pipe was plugged again.

Next they built a contrivance of steel posts and mesh to keep the beaver away from the upper end of the culvert. The beaver tunneled under the wire and plugged the pipe again.

Then, the maintenance men hung a bucket of creosote with a small hole in the bottom over the beaver's tunnel so the creosote would drip into the water. But the weather turned cold, the creosote stopped dripping, and the beaver tunneled under the wire and plugged the pipe once more.

Finally, maintenance superintendent Cecil Koenig drove a series of steel stakes just below the mesh and close enough together so that the beaver can't get through. That may do the trick—he hopes.

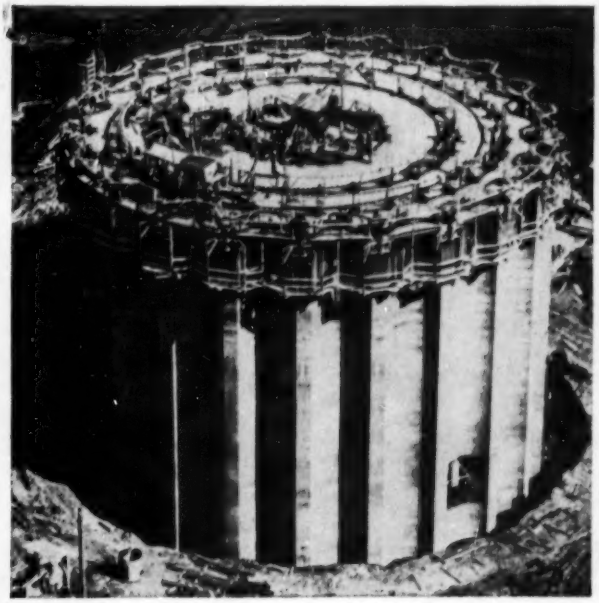
Poor Safety Record

The construction industry "may be proud of its production record but must feel shame at its safety record." That's the statement of consulting safety engineer Thomas M. Lively at the Greater New York Safety Council's construction session.

Lively said one out of every 11 construction workers suffers a disabling injury each year, and one in each 1,000 is killed on the job. That sounds high, but he is a man who should know. (See also Lively's remarks on insurance on page 123.)

LARGEST TANK OF ITS TYPE...

City of Dallas, Texas 2,000,000-gallon prestressed concrete water tank. Supported on reinforced concrete slab resting on four concentric ring walls. Substructure walls built simultaneously with slip forms using hydraulic jack system. Pozzolith employed in the concrete. Design: The Preload Co., Inc., New York City; Prime Contractor: Whittle Construction Co., Dallas. Sub-contractor for prestressing: Preload Construction Corp.



Left: View of the four tower cylinders under construction, with slip-form platform at top.

Right: Wire-winding machine wraps finished tank in pre-stressing operation.

POZZOLITH employed to obtain top results in Slip-Form Concrete

This giant water tank is one of many slip-form projects in which Pozzolith was used because it provides three controls required for optimum concrete performance in this type of construction. These controls are:

1. Lowest possible unit water content, with controlled placing consistency...for dense, segregation-free concrete.
2. Control of entrained air...for designed strength with required durability.
3. Control of rate of hardening . . . for speed where needed, for retardation when required—in any event good uniform concrete.

An illustrated bulletin that describes how Pozzolith was an aid in improving the control of concrete quality on slip-form work is available. Copy sent on request.

Whatever the type of construction, Pozzolith will give you superior concrete performance. May we demonstrate?

ENGINEERS and ARCHITECTS employ POZZOLITH with confidence

★ *proved performance*...115 million cubic yards of concrete produced with Pozzolith for all types of jobs.

★ *applied know-how*...more than 75 skilled Master Builders' field technical men for product-use consultation.

★ *available everywhere*...over 1000 ready-mix and job-site plants now producing concrete with Pozzolith.

The MASTER BUILDERS Co

Division of American-Marietta Company

Spreads 400 tons of road base per hour

. . . with help of 100 TIMKEN® bearings

THE Blaw-Knox Model P-150 Base Paver shown below can spread road base material of all kinds, ranging in size from dust to 5 inches, at a rate that averages up to 6½ tons a minute.

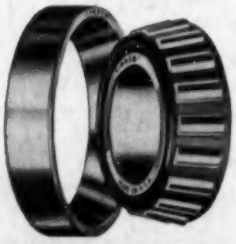
The 100 Timken® bearings used on the P-150 are one of the main reasons this 12-ton machine operates smoothly and without breakdowns. Timken bearings practically eliminate friction. For two reasons: a tapered design that is geometrically correct to produce true rolling motion, the answer to friction; and manufacture that lives up to the design. We even make our own steel. It's the only way we can be sure it's good enough for Timken bearings. We're the only U. S. bearing maker that does.

One Timken bearing application in this machine illustrates several of the reasons Blaw-Knox uses so many. Timken bearings on the eccentric that oscillates the screed take severe radial and thrust loads. Because of their tapered design, Timken bearings can take any combination of radial and thrust loads. And they take heavy, rapid shock loads—because rollers and races are case-hardened to provide a hard, wear-resistant surface over a tough, shock-resistant core. Timken bearings require little lubrication, minimum maintenance, because they keep shafts and housings concentric, make closures more effective. Lubricant stays in and dirt out.

All these advantages and more are yours when you specify the bearings with the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

BLAW-KNOX uses 100 Timken bearings on the P-150 Base Paver to get long life, low friction, little maintenance.

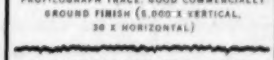


TIMKEN

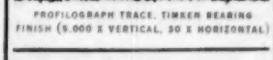
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

PROFILOGRAPH TRACE, GOOD COMMERCIALLY GROUND FINISH (5,000 X VERTICAL, 30 X HORIZONTAL)



PROFILOGRAPH TRACE, TIMKEN BEARING FINISH (5,000 X VERTICAL, 30 X HORIZONTAL)



OPTICAL FLAT, PERFECT FINISH

SMOOTH TO MILLIONTHS OF AN INCH

Surface finish of high quality Timken bearing rollers and races is so smooth that it takes a profilograph to measure its smoothness. This instrument measures surface variations to a millionth of an inch, as shown at the left.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◐ AND THRUST ◐ LOADS OR ANY COMBINATION ✳